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SOME UNSOLVED PROBLEMS OF TUBERCULOSIS

JAMES ALEXANDER MILLER, M.D.

NEW YORK

Physicians are all aware of the great progress in knowledge concerning tuberculosis which has occurred since the discovery of the tubercle bacillus in 1882. This, combined with the further recognized fact that there has occurred a notable decrease in the mortality and morbidity from tuberculosis in the greater part of the civilized world, has led to a feeling of satisfaction which is based on the assumption that the problems of this disease have been solved and that, in consequence, tuberculosis is in a fair way to be under definite and permanent control.

A critical analysis of the situation, however, reveals the somewhat disconcerting fact that while the very extensive researches have undoubtedly greatly increased knowledge, they have at the same time raised up many previously unsuspected problems concerning which there exist uncertainty and wide differences of opinion.

As some of the still unsolved problems concern the fundamental concepts of the pathogenesis and epidemiology of the disease, and as permanent control of tuberculosis depends on the soundness of such concepts, it seems desirable to review some of the disputed questions in the interest of progress in thinking, even though it be at the expense of complacency.

When one begins to look for them, one finds so many of these problems that it is impossible at this time to attempt the discussion of more than a few of those which are of especial interest and importance.

INFECTION AND CONTAGION

For centuries laymen have believed in the contagiousness of tuberculosis. Quarantine against it was established in Naples in 1751 and in Spain in 1782. Laënnec in 1817 noted the fact that nurses in contact with patients with phthisis rarely acquired the disease, although he did note that under certain conditions the disease might be communicable. Villemin, on the other hand, in 1853 based his notable animal experiments, which first proved the infectiousness of tuberculosis, on the observation that human phthisis was apparently communicable under crowded and untoward living conditions. In 1873, however, the elder Flint[1] wrote: "The doctrine of the contagiousness of the disease has now as hitherto its advocates, but the general belief of the profession is in its non-communicability."

Then came the discovery of the tubercle bacillus by Koch and Baumgarten in 1882, and as the enthusiasm engendered by the new knowledge of bacteriology was at that time in full flood it was natural that the profession and the laity alike should include tuberculosis with the other bacterial diseases which are communicable and contagious.

Thoughtful students, however, became increasingly impressed by the notable differences in the behavior of tuberculosis as compared with other infections. No one longer doubted that it was infectious or that the infection was communicable, but there were many inconsistencies in the relationship between the secondary phthisis and the primary source of infection.

Tuberculin surveys (Hamburger and Monti) a generation ago demonstrated that tuberculous infection was an almost universal phenomenon in large cities.

Postmortem studies (Naegeli, Burkhardt, Scheuermann, Huebschmann, Pagel) showed that in the overwhelming majority of adults there existed residues of a primary infection and also secondary lesions, especially in the lungs. While the numbers so infected are definitely less now than at the time of these original studies, it is still true that a large majority of all people are infected and yet only 1 or 2 per cent of adults contract phthisis.

It thus became obvious that other factors besides infection must enter into the problem to explain why disease develops in some persons and not in others.

RESISTANCE

Numerous clinical as well as experimental observations (Koch, Roemer and others) established the fact that the body offers an astonishing degree of resistance to its invasion by tubercle bacilli.

That in some instances this resistance is natural, constitutional or inherited is evidenced by the fact that many young children intimately in contact with tuberculous infection not only do not contract the disease but may even remain uninfected, as indicated by the lack of reaction to tuberculin. In several recent reports on extensive studies of a large dispensary material, Bezançon[2] emphasized that 18 per cent of children living in an infected environment do not react to tuberculin. Similar observations were made in an excellent epidemiologic study in a French village by Van den Eeckhout,[3] who obtained in 11 per cent of over 500 children a negative reaction to tuberculin in spite of definite exposure.

From the Tuberculosis Service of Bellevue Hospital.

Read before the New York County Medical Society, May 23, 1938.

1. Flint, Austin: Practice of Medicine, Philadelphia, H. C. Lea, 1873.

2. Bezançon, F.: Proceedings of the Tenth International Tuberculosis Congress: Lisbon, 1937, Bull. Internat. Union Against Tuberculosis **14**: 518 (Oct.) 1937.

3. Van den Eeckhout, H.: Contribution à l'étude de la primo-infection tuberculeuse parmi la population scolaire de la plaine, Rev. de la tuberc. **3**: 1029 (Nov.) 1937.

In the great majority of instances, however, the resistance appears to be acquired and dependent on a previous and usually non-disease-producing infection. In previously infected persons either no actual disease occurred or, if it did, it was definitely altered into a chronic localized disease usually situated in the lungs, i. e., chronic phthisis.

In contrast to these cases the differences in the behavior of the disease in noninfected soil (infants and virgin races) were most striking. Here the tuberculosis was an acute, rapidly disseminating infection throughout the body, with no tendency to localization. The situation was well summarized by Bushnell,[4] in 1920, as follows:

> The belief that consumption is not infectious was based upon an enormous experience, but very naturally seemed erroneous when the infectious agent became known. The study of many years was required to show that the belief contained an element of truth, that consumption is not infectious for those who have already a tuberculous infection, even though it be occult.
>
> The error of our fathers lay in failing to appreciate the fact that consumption, though indeed not infectious for the civilized adult, was sowing beautifully on every side the seeds of death for the child unprotected by a previous infection with tuberculosis. The error of modern times is to deny the protective influence of tuberculous infection against renewed infection from without. Thus is solved the riddle of the centuries. Our fathers saw one side of the shield, we have concentrated our attention too much on the other.

That this explanation, however did not completely "solve the riddle of the centuries" was evidenced by the fact that many previously uninfected persons escaped even when exposed and that many previously infected persons in the course of time contracted active phthisis.

For some of those in the first category the explanation of natural resistance is advanced. That this natural resistance may be inherited, not as specific resistance itself but as an increased resistance in the children of those who have acquired resistance, is a plausible theory recently supported by Doerr[5] in spite of the fact that it runs counter to the generally accepted biologic law of the nonheritability of acquired characteristics. That it may be an inherent constitutional quality not specifically defined is held by many, and it appears certain that much will be heard in the near future concerning constitutional factors in tuberculosis as well as in many other diseases.

In both categories, persons primarily infected and those uninfected, the quantity and the frequency of infection appear determining. Even in the susceptible persons an insufficient and infrequent dose of infection will not produce disease, while in those comparatively resistant because of a previous infection, a sufficiently large and frequently repeated dose will overcome any such resistance. That this acquired resistance may be enhanced by the cumulative effect of many repeated small infections is evidenced by the behavior of certain groups in which such infections have occurred; e. g., the Jews in Europe. In these groups, not only is the mortality low but when the disease occurs it is usually of a chronic, nonprogressive type. That a considerable amount of such resistance may be acquired within two generations has been shown by Ferguson's[6] careful study of a Canadian Indian tribe.

That this acquired resistance may be lost or seriously impaired has been equally well demonstrated. Evidence is accumulating that somewhat frequently sensitiveness to tuberculin may be evanescent when the infection is slight and may disappear when latent lesions become entirely healed. In such cases, while the infection does not behave like that in virgin soil, there is a diminished or altered resistance to reinfection. It is well known that resistance to tuberculosis may be impaired during certain infectious diseases (e. g., measles) or because of other unfavorable factors (such as malnutrition, the changes of puberty, pregnancy, or general economic and social stress) and that reinfection under such conditions is more likely to result in disease.

In general there is considerable evidence that resistance, both natural and acquired, has an important role in modifying the liability to disease after exposure to infection.

THE PATHOGENESIS OF PHTHISIS

My discussion now brings me to one of the most actively debated questions concerning tuberculosis: How does phthisis develop? Is it caused by direct contact with persons in the infectious stage through the inhalation of bacilli, or is it dependent on the activation of latent foci caused by the previous mobilization of bacilli to the lungs from the original primary lesion due to a previous, often remote, first infection?

The lines are fairly well drawn between physicians who believe in the exogenous origin and those who hold that evidence is in favor of the endogenous origin.

At first glance the first hypothesis, of direct cause and effect, appears plausible, and the early studies of Cornet and Pfluegge on the possibilities of droplet and dust modes of infection, respectively, aided in the crystallization of this theory. In recent times Aschoff[7] and Puhl have supported this contention and claimed the possibility of the accurate pathologic recognition of characteristic foci of exogenous reinfection; this possibility, however, has been disputed and apparently disproved by Loeschcke,[8] Pagel[9] and Grethmann.[10]

In this country Opie[11] has been the outstanding exponent of this theory, basing his opinion on his extensive epidemiologic and statistical studies. His main conclusions on this point, as indicated by his various reports, may be briefly summarized as follows:

1. Phthisis is produced by superinfection (exogenous reinfection) or by first infection of the lungs in adolescent or adult age.

2. Phthisis is a disease spread particularly by household contagion, which is even more dangerous to adults than to children.

3. As the severity of the disease is proportionate to the intensity and the prolongation of contact, the differences in dose of infection explain the individual variations in the disease.

Any conclusions based on such extensive studies as those of Opie deserve the most serious consideration. Yet a number of questions have been raised against his conclusions:

1. Why, if the inhalation of bacilli causes the disease, are not evidences of numerous such areas seen? As a

4. Bushnell, G. E.: A Study in the Epidemiology of Tuberculosis, New York, William Wood & Co., 1920.

5. Doerr, R.: Die erblichen Grundlagen der Disposition fuer Infektionen und Infektionskrankheiten, Ztschr. f. Hyg. u. Infektionskr. **119**: 635, 1937.

6. Ferguson, R. G.: Some Light Thrown on Infection, Resistance and Segregation by a Study of Tuberculosis Among Indians, Bull. Internat. Union Against Tuberculosis **12**: 107, 1935.

7. Aschoff, Ludwig: Lectures on Pathology, New York, Paul B. Hoeber, Inc., 1924.

8. Loeschcke, H.: Die Lungentuberkulose des Erwachsenen, Med. Klin. **25**: 173 (Feb. 1) 1929.

9. Pagel, W.: Pathologische Anatomie der hematogenen Streuungstuberkulose, Ergebn. d. ges. Tuberk.-Forsch. **5**: 231, 1933.

10. Grethmann, W.: Personal communication to the author.

11. Opie, E. L., and others: Studies on Tuberculosis, Am. J. Hyg. **22**: 539, 565, 644 (Nov.) 1935; **23**: 493, 530 (May) 1936.

matter of fact, instances of the existence of more than one original primary infection are extremely rare.

2. Why, when the undoubted inhalation lesions of first infection are practically invariably in the middle or peripheral zones of the lungs, are the lesions of phthisis so regularly in the apical regions?

3. What mechanism serves to direct the subsequent infection away from the obviously direct route taken by the first infection, up to a region so difficult of access?

4. It having been proved that only a minimal amount of infection can reach the terminal bronchi and alveoli and that such minimal doses rarely if ever produce progressive phthisis, if the dose is the determining factor are not the possibilities of large doses reaching any particular area much greater by spread from the latent lesions through the lymph and the blood stream than by inhalation?

5. It is known that the primary inhalation lesion in the lung rarely progresses directly to phthisis. Why should the presumed subsequent inhalation lesions behave so differently?

6. It has been definitely proved that in the great majority of adults there often exist, in addition to the primary lesion, numerous secondary lesions, most regularly in the apexes of the lungs, and that these lesions harbor viable tubercle bacilli for an indefinite number of years. Can these apical lesions be ignored as the origin of apical phthisis?

7. Granted that active pulmonary disease is much more frequent under conditions of intense and prolonged contact, is there not some other explanation possible than that of the production of new direct inhalation lesions?

Physicians who are convinced of the validity of these objections to Opie's conclusions are advocates of the theory of the endogenous origin of phthisis. In the past decade and more their number has proved to be very large and includes pathologists and clinicians in many countries.

In general it would appear that the majority of careful students of tuberculosis now accept this explanation of the usual origin of phthisis and either reject the possibility of its origin from direct exogenous reinfection altogether or recognize its possibility as a comparatively rare exception to the rule.

Endogenous Phthisis.—The sequence of events in the development of phthisis from endogenous sources of infection was first most logically presented by Ranke. Beginning with the pathologic conception of the primary complex, with its pulmonary and lymphatic poles, as first discussed by Parrot, Kuss and Ghon, Ranke described the postprimary dissemination from the lymphatic pole through the lymph and blood stream, with numerous deposits in various organs but especially in the apical and subapical zones of the lungs, and from these foci the development when the conditions are favorable of active organic phthisis. From this point the disease spreads no longer by the lymph and blood stream but by the air passages, the so-called method of bronchogenic spread. This mode of development from such latent inactive lesions has been designated by Ulrici[12] as "exacerbation phthisis." Its occurrence depends either on the lowering of resistance, as I have already indicated in my discussion of that subject, or on the exacerbating effect of considerable exposure to new exogenous infection in developing a hypersensitiveness, as will be discussed later in the consideration of the problem of allergy. This has been designated by Redeker[13] as the "trigger action" of superinfection.

It is to be emphasized that these latent foci are a most common finding by modern radiographic methods, that while they always represent potential possibilities for phthisis they are not in themselves phthisis and that, in fact, a very small percentage of them ever do develop into phthisis. Consequently, while they deserve recognition and periodic radiographic reexamination and indicate supervision of the subject, they by no means always need active treatment. The discovery of the foci and the proper management of the subject present one of the great unsolved problems of tuberculosis today.

Another important problem is that of the danger of infection to young adults who have previously been uninfected. The interest in this group has been largely concentrated on the problem of nurses and physicians. Heimbeck and Wallgren in Scandinavia and Edwards in England have made special studies of these groups, and in this country the work of Myers and his associates has received wide attention. Myers[14] stated:

> With approximately 100 per cent of the students contaminated with tubercle bacilli during the course of their training, one must expect the incidence of demonstrable lesions, which subsequently develop, to be much higher than in a general population, in which not more than from 10 to 30 per cent of the young adults have been infected with tubercle bacilli. Where actual observations have been made this has been found to be true.

He said further:

> While we have been priding ourselves over the marked decrease in the incidence of positive tuberculin reactors among children and young adults throughout most of this nation, we have tolerated a situation that has permitted students of nursing and medicine to become infected with tubercle bacilli at a rate no less than probably existed in the general population a century ago.

That this situation represents to him a real tragedy is evidenced by his statement:

> We know that once the primary complex has been allowed to develop, as manifested by a positive tuberculin reaction, there is no treatment of any avail; that is, the condition is beyond recall. Immunity does not develop sufficient to destroy the tubercle bacilli. No treatment that we know, such as long periods of strict bed-rest or even collapse therapy, destroys the tubercle bacilli in the lesions of the primary complex. Moreover, we have no practical method of permanently desensitizing the tissue of such persons.

Heimbeck and Wallgren are not so pessimistic and have been experimenting with BCG vaccination in these groups. A report on the ultimate results of their experiments will be interesting. Possibly, as will be discussed in my consideration of allergy, a better appreciation of those who are more liable to serious effects from considerable exposure to infection may some day be obtained from studies of their various allergic states, and possibly in this way provision may be made for their more adequate protection.

12. Ulrici, H.: Die Lungentuberkulose der Erwachsenen im Gesamtbild der Tuberkulose, Bull. Internat. Union Against Tuberculosis **13:** 477, 1936.

13. Redeker, F.: Das Problem der Reinfektion vom klinischen Standpunkt aus; in Engel, Stefan, and Pirquet, Clemens: Handbuch der Kindertuberkulose, Leipzig, Georg Thieme **1:** 261, 1930.

14. Myers, J. A.: The First-Infection Type of Tuberculosis, Am. Rev. Tuberc. **34:** 317 (Sept.) 1936. Myers, J. A.; Diehl, H. S.; Boynton, Ruth E., and Trach, Benedict: Development of Tuberculosis in Adult Life, Arch. Int. Med. **59:** 1 (Jan.) 1937; The Latent or Smoldering Stages in Tuberculosis, Am. Rev. Tuberc. **36:** 355 (Sept.) 1937; Tuberculous Pulmonary Infection in Hospital Personnel, 33d Annual Meeting of the National Tuberculosis Association, 1937, p. 309.

Apparently, although he has not categorically so stated, Myers believes in the endogenous spread of lesions to the lungs from the primary complex but considers such lesions in the same serious category as definite phthisis. Apparently also he believes that the only real solution eventually is a community not only completely tuberculin negative but free from opportunities for infection.

To many, as to Bushnell, this seems hardly a feasible objective and moreover one that is fraught with dangers if the process of acquiring racial resistance through habituation to occasional small doses of infection is interrupted. Also, many do not share Myers' great dread of first infections, for the reason that only a small percentage of them ever develop into phthisis and that for many persons they apparently afford a considerable measure of protection against the practically unavoidable occasional contacts with heavier doses which occur in modern urban communities, as well as against the even heavier doses that may arise from the intermittent endogenous discharges of bacilli from existing lesions.

While Opie expressed agreement with Myers' concept of the special danger from first infections in young adults, other workers, such as Schroeder [15] and Herlitz,[16] have come to opposite conclusions.

Under such conditions of reasonable doubt concerning the dangers involved it would appear desirable that further studies should be made before such sweeping conclusions as those of Myers are reached.

Summarizing the present state of knowledge of the problems of infection, it may be stated that:

1. Infection is transmitted from one human being to another.

2. Opinion differs as to whether this infection is the direct cause of phthisis in the lungs, but the majority of workers now believe that it is not.

3. The development of phthisis requires something more than infection.

4. This factor in the majority of cases is the exacerbation of preexisting lesions.

5. The exacerbation may be caused by superinfection from the outside but is more especially dependent on variation in the resistance of the body to the infection, whether it is exogenous or endogenous.

6. There exists a long period of latency before the lesions become exacerbated, and in the large majority of cases they never develop into phthisis or clinical disease.

7. Differences of opinion exist as to the danger of first infection in adults as compared with that of the exacerbation of previously existing lesions.

ALLERGY AND ANERGY

The practical meaning of allergy and anergy with regard to tuberculosis is the sensitiveness or lack of sensitiveness to tuberculin.

In my discussion of acquired resistance I noted the effect (allergy) of the changed reaction following infection on the behavior of the tissues to subsequent infection and that this change apparently affords a certain degree of protection against the development of disease. As this is an immunobiologic reaction it has led to considerable discussion and confusion of thought concerning allergy and immunity. It is now a generally accepted fact that in the human being there is no true immunity to tuberculosis, that a sufficient dose of infection will always cause disease but that, on the other hand, there is a great variation between persons as to the dose necessary to produce this result. It is also known that allergy and immunity are distinct characteristics although they have a definite relationship to each other. This has been expressed by the formula that allergy is associated with a relative immunity. As this is by no means always true, if by immunity one means protection against disease, and as the whole subject is a very complex one by no means completely understood, it would appear wiser and more nearly in accord with known facts if, at least in clinical thinking, one used the term resistance and discarded the term immunity altogether.

The Significance of Reactions to Tuberculin.—The question concerning allergy which clinicians wish to have answered is What is the significance of a positive or a negative reaction to tuberculin in a given case, and if the reaction is positive what significance may be attached to a mild as opposed to a marked reaction? Epidemiologists are greatly interested also in the mass significance of the results of tuberculin surveys, now very numerous, which show such varied results in different communities. A positive reaction to tuberculin certainly indicates a previous tuberculous infection. A negative reaction, or a state of anergy, as Hayek termed it, may or may not indicate absence of such infection. In infants and young children a negative reaction is practically positive evidence of lack of such infection. This is essentially true of older children and adults in nontuberculized communities (virgin soil).

It has long been well known that allergy is lost in the terminal stages of tuberculosis, during some of the infectious diseases (measles) and also during depressed physical conditions from various causes. Also, it is definitely known that sensitiveness to tuberculin disappears when tuberculous lesions become completely healed. It is less generally recognized that after a considerable number of mild infections the resulting allergy is evanescent and that sometimes the lesions themselves may entirely disappear. Paretzky [17] recently reported the actual observation of loss of allergy in eighty cases of arrested pulmonary tuberculosis. Neal [18] claimed this to be a sign of arrest under treatment by pneumothorax. In rare instances loss of allergy within a short time after first infection in children has been observed.[19] Though the patient reacts negatively to tuberculin, should reinfection occur his behavior is not that of virgin soil but rather that of a mildly allergic person. This is of importance in assessing the epidemiologic significance of negative reactors and also as an explanation of some of the apparently primary lesions in adults which have recently been reported. That allergy to tuberculin may fade out after mild tuberculous infection was supported by the experimental data of Calmette [20] and Guérin. The idea has since been considered by a number of clinical observers (Kristenson,[21] Troisier and his co-workers,[22] Courcoux

15. Schroeder, E.: Tuberkulose und Schule, Ergebn. d. ges. Tuberk.-Forsch. **8**: 521, 1937.

16. Herlitz, Gillis: Studien über die Prognose der okkulten Kindertuberkulose, Acta paediat. (supp. 2) **19**: 1-157, 1937.

17. Paretzky, M.: The Diagnostic Application of High Doses of Tuberculin, Am. Rev. Tuberc. **36**: 313 (Sept.) 1937.

18. Neal, J. R.: Allergy as a Guide in Terminating Artificial Pneumothorax, Am. Rev. Tuberc. **32**: 326 (Sept.) 1935.

19. Brailey, Miriam: Factors Influencing the Course of Tuberculous Infection in Young Children, Am. Rev. Tuberc. **36**: 347 (Sept.) 1937.

20. Calmette, Albert: Tubercle Bacillus Infection and Tuberculosis, Baltimore, William & Wilkins Company, 1923.

21. Kristenson, A.: Contribution to the Knowledge of Tuberculous Infection Among Student Nurses, Acta tuberc. Scandinav. **7**: 1, 1933.

22. Troisier, J.; Bariety, M., and Nico, P.: Tuberculose pulmonaire du type "adulte" après virage de la cuti-réaction tuberculinique chez de jeunes adultes, Bull. et mém. Soc. méd. d. hôp. de Paris **53**: 890 (June 21) 1937.

and his associates,[23] and Irimescu and Nasta [24]), who noted that the processes developing on exposure in these persons are unlike either primary or phthisical ones.

A positive reaction to tuberculin represents a state of allergy and indicates a previous tuberculous infection but of course not necessarily the presence of active disease. In fact, in the large majority of reactors the lesions which may still exist are entirely latent and inactive. I have already indicated that this affords a certain degree of protection against reinfection. That the allergic state may be a two-edged sword has also been indicated. The situation has been admirably summarized by Topley [25] as follows:

> There is a good deal of evidence derived from clinical and radiographical observations to suggest that, though allergy serves as a valuable protective mechanism against reinfection in normal persons with inactive latent foci of tuberculosis, in patients suffering from the disease or in persons with latent active foci, it may have the reverse effect. Such persons, when exposed to reinfection, of either exogenous or endogenous origin, react much more strongly than normal persons. A severe inflammatory disturbance is liable to develop around the active focus, and lead to general toxemia and extension of the local lesion.
>
> If this conception is correct it will be seen that there is no simple relationship existing between allergy and the liability to develop clinical tuberculosis. The relationship is dependent on a number of variable factors, among which the state of the lesions, the general environmental conditions and the risk of exposure to infection are probably three of the most important. If we are to gauge the liability of individual persons to develop clinical tuberculosis, a knowledge of their sensitivity to tuberculin is clearly insufficient. In addition, we shall want to know the number, extent, and degree of activity of all tuberculous foci in the patient's body, together with his general environmental conditions and mode of living. Whether such knowledge, if obtained, would enable us to assess, in terms of probability, the likelihood of tuberculosis developing, we are not in a position to say, but investigations are now on foot which it is hoped will provide an answer to this question—at any rate so far as pulmonary tuberculosis is concerned.

As long ago as 1923 Redeker emphasized that exogenous superinfection tends to exacerbate old foci and bring about dissemination and endogenous metastasization from them. This assumption has since been accepted by a number of workers.[26] This is the "exacerbation phthisis" of Ulrici, to which reference has already been made and which is now ascribed to the effect of hypersensitization.

The Intensity of the Reaction.—As to the significance of the intensity of the reaction to tuberculin, although some knowledge exists, it is far from complete. There is reason to believe that the intensity depends largely on the intimacy of contact, involving more frequent exposures to infection as well as larger doses, and also on the time that has elapsed since exposure.

For example, in studies with children Boyd [27] found that 48.27 per cent of those in whom the source of infection was found gave a positive reaction to a 1 : 1,000 dilution and 16.27 per cent a positive reaction to a 1 : 100 dilution. He said: "The source of infection was found for 60.87 per cent of those children with 3- and 4-plus reactions, and for only 14.28 per cent of those with 1- and 2-plus reactions" and concluded that "the character of the skin reaction is a better index of the intimacy of contact than is the presence of a definite lesion in the x-ray."

From observations on children Schuman [28] concluded:

> The more recent the exposure the greater is the reaction to tuberculin. It is not definite whether the time-interval dates from the period of the primary infection or from the period of exposure to positive sputum.

The degree of sensitization to tuberculin may be measured either by the intensity of reaction to a standard dose or by the size of the dose required to produce a definite reaction. Recognizing the fact that intimacy of contact may greatly intensify the reaction, Long and his associates [29] recommended that under such circumstances the more potent strength of their purified protein derivative be avoided. In this connection it may be stated that this derivative represents a great advance in the preparation of tuberculin and that its general use will tend to extend more accurately our knowledge of the significance of varying reactions.

That hypersensitivity to tuberculin not only may indicate recent or severe exposure but may involve a great risk of the development of "exacerbation phthisis" is indicated by reports such as those of Wilcocks [30] in South Africa, who stated:

> As regards Tanganyika Territory, it can be stated that in those communities where opportunity for contact is likely to be greatest, we find . . . first, the highest percentage of positive reactors to tuberculin; second, the strongest reactions; and, third, the greatest numbers and proportions of recorded disease. . . . It seems logical, therefore, to think that continuous exposure to exogenous reinfection tends to produce, first, sensitivity, then hypersensitivity, and finally disease.

As exposures to infection as well as individual resistance vary greatly at different times, it is not surprising to find that the sensitivity to tuberculin varies greatly in the same person. The advantage that may be taken of this fact as an indication of the occurrence of a new infection or of the danger of active disease has not been fully explored, but it appears certain that periodic tests with tuberculin are essential to the understanding of the individual case, especially from an epidemiologic point of view, if the full value of surveys with tuberculin is to be realized. For example, it has been shown by Long and Seibert [29] in their series of tests with purified protein derivative that the present decline in tuberculosis morbidity is associated with a marked decline in the intensity of allergy; and, on the other hand, it has been shown by Opie and others that morbidity, that is, active phthisis, goes parallel with the incidence of hypersensitiveness, which is a point in favor of those who hold for hypersensitiveness as a reactivating agent.

The degree of allergy varies with the level of tuberculization in the environment, that is, differences in exposure by contact; hence it would appear that it is not the absolute but the relative level which counts. In

23. Courcoux, A., and Albert, A.: Quelques cas de primo-infection du jeune adulte, Rev. de la tuberc. **2**: 71 (Jan.) 1936.
24. Irimescu, S., and Nasta: Proceedings of the Tenth International Tuberculosis Congress: Lisbon, 1937, Bull. Internat. Union Against Tuberculosis **14**: 495 (Oct.) 1937.
25. Topley, W. W. C., and Wilson, G. S.: Tuberculosis, in the Principles of Bacteriology and Immunity, London, Edward Arnold & Co., 1936.
26. Braeuning, H.; Ulrici, H.; Graeff, S., and Ickert, F., quoted by Redeker: Das Problem der Reinfektion vom klinischen Standpunkt aus; in Engel, Stefan, and Pirquet, Clemens: Handbuch der Kindertuberkulose, Leipzig, Georg Thieme, 1930, vol. 1, p. 261.
27. Boyd, A. R. J.: The Incidence of Tuberculosis in Children Entering Primary Schools in Vancouver, Am. Rev. Tuberc. **34**: 67 (July) 1936.
28. Schuman, Charles: Contact as a Factor in the Transmission of Tuberculosis, Am. Rev. Tuberc. **34**: 85 (July) 1936.
29. Long, E. R., and Seibert, Florence B.: Further Studies on Purified Protein Derivative of Tuberculin, Am. Rev. Tuberc. **35**: 281 (March) 1937.
30. Wilcocks, Charles: The Tuberculosis of the Natives of Tanganyika Territory, Brit. J. Tuberc. **31**: 223 (July) 1937.

persons living in a tuberculized environment, exposed constantly to infection, a permanent high level of allergy is maintained, and the exposure must be greatly intensified to produce a dangerous degree of hypersensitization. On the other hand, in those living in an environment of low tuberculization, tending to exhibit a low level of allergy, a much less intense exposure may produce hypersensitiveness. It would appear, therefore, that it is not the dose of infection alone but the previous degree of allergy which in any individual case indicates the danger of reactivation of lesions through hypersensitiveness. The practical importance of this situation is apparent; i. e., a given amount of exposure to infection may be serious for one person and quite harmless for another.

It must, however, be borne in mind that change in the level of allergy is not the only factor, as has been well emphasized by Topley, who stated:

> How much of this activation of latent lesions was due to the allergic condition of the tissues, and how much to the effect of physical fatigue and possibly other environmental conditions in lowering the general resistance of the body, it is impossible to say.

My discussion has served to indicate how complex and at the same time how fascinating is this whole question of allergy in tuberculosis and how much it requires further study.

The present state of knowledge tends to indicate that:

1. Tuberculin allergy is a relative phenomenon, which must always be considered in relation to the level of tuberculization in the environment or the extent of tuberculosis present in the individuals in question.

2. It is not the momentary level of allergy but its relative changes in either direction which are significant.

3. Infection sensitizes. Superinfection hypersensitizes. Hypersensitization may act to promote progression of recent lesions or reactivation of old lesions if it occurs too suddenly or becomes excessive.

SUMMARY AND PRACTICAL APPLICATIONS

1. Continued or frequent exposure to large doses of infection may lead to acute disseminated tuberculosis in previously uninfected persons, especially in young children; or in those already primarily infected it may give rise to active phthisis by the exacerbation of old latent lesions through hypersensitization or possibly by the formation of new pulmonary lesions through exogenous superinfection. Consequently, protection from such undue exposure is of paramount importance in the prevention of tuberculosis. Institutional segregation of patients with advanced infection is by far the most effective step in this direction.

2. Although in most communities from 30 to 80 per cent of the population eventually is infected with tuberculosis, only from 1 to 2 per cent contract active disease. It is therefore as important to analyze why the majority stay well as to discover why the comparatively few become sick. The study of resistance is of as great, if not greater, importance than the study of infection.

3. There is much that is not known about resistance to tuberculosis, and much of our supposed knowledge is based on inference rather than on definite proof. Natural or constitutional resistance would appear to be a real thing, as evidenced by the great variation in susceptibility under similar conditions of infection in individuals, in families and in races. This applies to susceptibility not only to disease but to infection, as shown by an appreciable percentage of exposed children who do not react to tuberculin. It would appear that this natural resistance can be enhanced through generations, and the question of the possibility of transmission through inheritance of at least a capacity to develop resistance is a live question. More and more is heard of constitutional factors in resistance not only to tuberculosis but to other diseases as well. The development of further knowledge in this direction will merit attention.

4. There is overwhelming evidence that a tuberculous infection successfully met changes the reaction of the body to subsequent infections, whether from within or without, in such a way as to increase resistance. Such acquired resistance is only relative and may be overcome by large doses of infection or may be lowered by various adverse environmental factors. The attainment of this resistance, acquired through many years or even through generations of exposure to repeated small doses of infection, has greatly modified the character of the disease and diminished its prevalence. What the epidemiologic effect will be of the increasing proportion of uninfected persons and their possible exposure to infection later in life from the residual foci of disease in urban centers is one of the great open questions of the future. Opinion is sharply divided as to whether it is better to face the vicissitudes of life with a positive or a negative reaction to tuberculin. If the former, is it better to receive the infection early in childhood or late in adult life? If the latter, what is the danger of contracting an acutely virulent type of tuberculosis rather than a more benign chronic type? On these points also opinions differ.

5. At first sight the two opposing theories of the exogenous and the endogenous pathogenesis of phthisis may seem a technical problem of main interest only to pathologists. When analyzed, however, their practical importance is obvious. If phthisis arises in the main from the inhalation of large or frequent doses of tubercle bacilli and the old residual lesions of previous small infections are innocuous scars, then efforts can be concentrated solely on the prevention of such exposure. If, on the other hand, infections insufficient to cause actual disease leave behind them in the lungs latent foci capable of reactivation not only by exposure to new infection but by numerous environmental factors which, by lowering resistance, allow the bacilli to multiply and the lesions to become active, then these latent lesions assume great importance as the potential sources of phthisis. Many, perhaps the majority, of students now believe that they constitute not only possible but the main factors in the ultimate development of phthisis. The discovery and the management of these potential lesions then become one of the great clinical and public health problems.

6. The discovery of these lesions is accomplished by roentgenograms. They give no physical signs and no symptoms until they become active. The extraordinary extension of roentgenologic surveys is showing them up by the thousands. In the great majority of cases these lesions are latent and innocuous and will always remain so under ordinary conditions of life. It is therefore unnecessary and unjust to submit them to the long treatment indicated for active tuberculosis. They are, however, possible sources of phthisis; consequently the subjects should be kept under regular supervision, with periodic roentgenograms and warnings as to the danger signals of beginning active disease. They should be surrounded by a protective environment, by which is meant freedom from the factors lowering

resistance, on the one hand, and freedom from exposure to hypersensitizing doses of infection, on the other. When activity is discovered early, they respond remarkably well to modern rest treatment, but to detect an early stage requires careful and expert supervision constantly exercised over periods of years. It would appear that the discovery and proper management of latent lesions constitute the greatest opportunity for clinicians to make a real contribution to the prevention of phthisis that exists today. Beginnings only are being made in this direction.

7. Closely associated with the roentgenologic surveys are the survey with tuberculin. They are affording much epidemiologic as well as clinical information of great value. They have been employed largely to determine the extent of infection which exists in a given community at a given time. It would appear that they may have wider possibilities. The reaction to tuberculin in any given person may change; it may become less or entirely disappear, or it may become more marked. To study a community accurately, periodic repetitions of the test would be helpful. These have not yet been done on a wide scale. The results might be expected to give important information as to the real significance of these changes, their possible relationship to the changing incidence of exposure to infection and their possible relationship to the development of clinical disease. A better understanding of the significance of negative reactions would also be a real contribution to our present knowledge, which is now more suggestive than complete.

8. It is possible that as a result of more careful clinical and epidemiologic studies, knowledge might be obtained which would lead to the discrimination between persons who would be a good risk and those who would be a bad risk when unduly exposed to infection. It is obviously impossible, for example, in the matter of medicine and nursing to exclude all young people entering these professions from exposure to tuberculous infection. As a very small percentage of physicians and nurses actually contract the disease even when seriously exposed to infection, it is obvious that other factors than the infection itself are important. The exposure of young people with a negative tuberculin reaction to intimate contact with infection is obviously undesirable. Also, it has been shown that exposure may result in exacerbation of lesions already existing. It would appear at least a possibility that if one could gradually accustom a person whose reaction to tuberculin was negative to small, properly spaced doses of infection, gradual tolerance to larger doses of infection could be achieved. There is certainly evidence that changes of environment that result in sudden increase of allergy may be a factor in the development of clinical disease. By careful study of persons having apparently inactive lesions, a basis of judgment as to who is likely to react unfavorably and who is not might be formed.

On the other hand, it is distinctly a possibility of the future that some form of vaccination may be perfected which will definitely diminish the danger of disease from contact with infection. Experiments with BCG are most interesting and suggestive, but apparently BCG in itself has as yet not been proved to be the ideal vaccine. It is applicable only to the uninfected, and for them its efficacy is not yet proved. The future may provide a form of vaccine to be used by means of repeated small injections over long periods for both infected and uninfected persons.

9. From all these considerations it is obvious that one should carefully consider what is the ultimate goal aimed at for the control of tuberculosis. If it is to be the total eradication of the disease, with an absolutely uninfected community, how seriously should one take the warning of Bushnell and others that eventually such a community of virgin soil might revert to the early epidemiologic stage, in which acute epidemic forms of tuberculosis may appear, due to exposure to the few remaining uneradicated foci? Should one look rather to a form of vaccination, either by control of small doses of infection, such as apparently has been going on throughout the civilized world, on the other hand, to a more accurate and satisfactory form of artificial vaccination?

10. I have touched on only a few of the problems of tuberculosis which are still unsolved. It would appear obvious that the campaign must be based on accurate scientific knowledge and that this is still lacking in some important particulars. Consequently it would be a mistake to assume that the methods now employed are certainly sufficient to solve the tuberculosis problem. They must change in the light of new knowledge, and it may well be that the future holds unwelcome possibilities not visualized by those who consider that the goal would be in sight if the methods which appear adequate according to our present knowledge were thoroughly applied.

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CONCENTRATIONS OF CHLORIDE, SODIUM AND POTASSIUM IN URINE AND BLOOD

THEIR DIAGNOSTIC SIGNIFICANCE IN ADRENAL INSUFFICIENCY

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It was shown by Loeb and his associates [1] that adrenalectomized dogs excreted excessive amounts of sodium and chloride and suggested [2] that the so-called crisis of Addison's disease might result from a similar loss of these electrolytes. It later was demonstrated by one of us (Wilder) with Kendall and others [3] that administering potassium to patients with Addison's disease would provoke excretion of sodium and chloride

From the Division of Biochemistry (Dr. Power) and the Division of Medicine (Dr. Wilder), the Mayo Clinic.
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Technical assistance in this investigation was obtained from Miss Kathryn Smith, assistant floor supervisor, and Miss Jane Pewters, floor dietitian, St. Mary's Hospital. Our analytic assistants were Miss Kathryn Ryan, Miss Lenore Rivers, Mrs. Lucile Adamson and Miss Charlotte Bradshaw. Dr. Everett Geer gave permission to examine six patients with pulmonary tuberculosis at the Ancker Hospital, St. Paul.

1. Loeb, R. F.; Atchley, D. W.; Benedict, E. M., and Leland, Jessica: Electrolyte Balance Studies in Adrenalectomized Dogs with Particular Reference to the Excretion of Sodium, J. Exper. Med. **57**: 775-792 (May) 1933.

2. Loeb, R. F.; Atchley, D. W.; Gutman, Ethel B., and Jillson, Ruth: On the Mechanism of Sodium Depletion in Addison's Disease, Proc. Soc. Exper. Biol. & Med. **31**: 130-133 (Oct.) 1933.

3. Wilder, R. M.; Kendall, E. C.; Snell, A. M.; Kepler, E. J.; Rynearson, E. H., and Adams, Mildred: Intake of Potassium, An Important Consideration in Addison's Disease: A Metabolic Study, Arch. Int. Med. **59**: 367-392 (March) 1937. Wilder, R. M.; Snell, A. M.; Kepler, E. J.; Rynearson, E. H.; Adams, Mildred, and Kendall, E. C.: Control of Addison's Disease with a Diet Restricted in Potassium: A Clinical Study, Proc. Staff Meet., Mayo Clin. **11**: 273-283 (April 29) 1936.

and precipitate crisis. From this the supposition arose that examination of the urine for sodium and chloride, under standard conditions of administration of potassium, might provide more reliable information about adrenocortical function than frequently is obtained by examination of the blood.

Preliminary studies revealed that the supposition probably was justified. Under conditions imposed, the excretions of chloride and sodium in urine of eight subjects with classic Addison's disease were much greater than those found in a group of eight subjects without evident disease of the adrenal glands. Then a more rigidly standardized procedure, to be described, was adopted, and with it thirty-six additional subjects were examined (table 1). Eight of these were other patients with signs and symptoms typical of Addison's disease; six were patients who complained of nondescript asthenias; seven were patients with frank tuberculosis (pulmonary tuberculosis, six cases, three with fever; urogenital tuberculosis, one case); ten were healthy men or women and five were patients with miscellaneous diseases, including chronic infectious arthritis (two cases), metastatic staphylococcic abscess with fever (one case), duodenal ulcer (one case) and nephrosclerosis with hypertension (one case).[4] Whenever there was any suspicion of involvement of the adrenal glands (patients with unexplained asthenia and those with tuberculosis) additional evidence of adrenocortical adequacy was sought by extending the period of restricted intake of salt, in the standard examination to be described, to a total of six days, for the last three of these enough potassium citrate being given to bring the daily intake of potassium ion to 9 Gm. We have never encountered a case of tuberculosis or atrophy of the adrenal glands in which this extended period of salt restriction and high potassium failed to provoke clear evidence of cortical insufficiency.

THE STANDARDIZED PROCEDURE

When patients with Addison's disease previously were receiving either adrenal cortex extract or extra salts of sodium, these were withheld on the day preceding the first day of the special examination. Longer periods of such preparation proved to be unnecessary.

On the first day of the examination, and thereafter until its close, a diet low in salt was served, which by calculation provided 0.95 Gm. of chloride ion, 0.59 Gm. of sodium and 4.1 Gm. of potassium (table 2). The fluid intake of the first day was not measured, but the free drinking of water was encouraged. On the afternoon of the first day extra potassium was given, as potassium citrate, in a dose representing 33 mg. of potassium per kilogram of body weight (42 mg. of potassium citrate per pound).

On the second day the intake of liquid was made to equal 40 cc. for each kilogram of body weight, and on the morning of this day the dose of potassium citrate was repeated.

On the third day 20 cc. of liquid per kilogram of body weight was given before 11 a. m. At 12 noon of this third day the examination ended, except in those cases in which the period of deprivation of salt was extended in order to obtain additional evidence of the state of adrenocortical function. At the close of every examination, in all cases in which adrenal insufficiency was suspected, an intravenous injection was given of 1,000 cc. of sterile solution containing 50 Gm. of

TABLE 1.—*Rates of Excretion of Sodium, Chloride and Potassium, Together with Concentrations*

	Sodium							
	Blood Plasma, Mg. per 100 Cc.		Urine, Mg. per 100 Cc.		Urine, Mg. per Kg. per Hr.		Blood Plasma, Mg. per 100 Cc.	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Subjects with Addison's disease (7 cases)								
24 hr. period, 2d day salt deprivation.....	299 * (130) §	286-309 (124.3-134.3)	198	118-299	2.73 (0.119)	1.36-5.4 (0.059-0.235)	336 * 94.6	298-353 (83.9-99.4)
4 hr. period, morning 3d day salt deprivation	279.6¶ (121.6)	247-292 (107.4-127)	206.7	165-282	2.58 (0.112)	0.74-7.59 (0.032-0.33)	313.6¶ (88.2)	271-337 (76.3-94.9)
Subjects without Addison's disease; summary of all subjects (28 cases)								
24 hr. period, 2d day salt deprivation.....	311.6 (135.5)	300-322 (130.4-140)	57	5-150	0.895 (0.039)	0.168-2.06 (0.0073-0.09)	349 (98.3)	333-371 (93.8-104.5)
4 hr. period, morning 3d day salt deprivation	307.6 (133.7)	289-325 (125.7-141.3)	22.4	6-85	0.495 (0.021)	0.088-1.18 (0.0038-0.051)	342 (96.3)	324-367 (91.3-103.4)
Subjects without Addison's disease; asthenia (6 cases)†								
24 hr. period, 2d day salt deprivation.....	311.8	303-318	70.3	31-150	1.17	0.57-2.06	348.8	340-355
4 hr. period, morning 3d day salt deprivation	307.7	300-312	28.6	5-85	0.54	0.17-0.83	342.5	329-355
Subjects without Addison's disease; tuberculosis (7 cases)								
24 hr. period, 2d day salt deprivation.....	308.3 (134)	302-316 (132-137)	36.1	10-79	0.41	0.17-0.57	351.7 (99)	341-368 (96.5-104)
4 hr. period, morning 3d day salt deprivation	306.9 (133)	289-321 (125-139)	25.3	10-57	0.73	0.3-1.18	344.7 (97)	324-366 (91.5-103)
Subjects without Addison's disease; miscellaneous diseases (5 cases)								
24 hr. period, 2d day salt deprivation.....	310	300-322	68	35-105	1.21	0.84-2.02	345.4	333-355
4 hr. period, morning 3d day salt deprivation	304.8	297-311	23.8	5-55	0.38	0.19-0.57	338.2	329-348
Subjects without Addison's disease; healthy men and women (10 cases)								
24 hr. period, 2d day salt deprivation.....	316 (137)	310-320 (135-139)	55	33-104	0.81	0.47-1.43	349 (98)	340-371 (96-104.5)
4 hr. period, morning 3d day salt deprivation	310.8 (135.5)	302-325 (131.5-141)	11.7	6-22	0.33	0.088-0.84	342.3 (96.5)	324-367 (91.5-103)

* Represents blood specimen at beginning of twenty-four hour period.
† Represents highest urea observed while under observation.

4. Two other subjects were examined after the compilation of table 1; one a patient with Addison's disease and one with an asthenia thought to be due to carcinomatosis.

d-glucose, 10 Gm. of sodium chloride, 5 Gm. of sodium citrate and 20 cc. of an active preparation of cortical hormone.[5]

Blood was drawn in an oiled syringe from the cubital vein at 8 a. m. of the second day of examination and at 10 a. m. of the third day. It was transferred to cooled 20 cc. hematocrit tubes containing heparin and oil, and the plasma was separated by means of a refrigerated centrifuge. Urine was collected in three periods: from 8 a. m. to 8 p. m. of the second day, from 8 p. m. to 8 a. m. of the third day, and from 8 a. m. to 12 noon of the third day.[6]

RESULTS

A summary of the data obtained by means of this procedure in thirty-five cases is given in table 1.

The average depression of these values, from the second to the third day, in subjects with Addison's disease was 19.4 mg. per hundred cubic centimeters; that in subjects without Addison's disease was only 3.6 mg. per hundred cubic centimeters. However, wide overlapping again was evident.

Blood Plasma Chloride.—The statements about the values for sodium in the plasma apply with almost equal force to the values obtained for chloride.

Blood Plasma Potassium.—The average of all values for potassium in the plasma of the subjects with Addison's disease was only slightly higher (about 3 mg. per hundred cubic centimeters) than that of the subjects without Addison's disease. The values for the two groups overlapped widely.

in Blood and Urine: Observations on Thirty-Five Subjects, Seven with Addison's Disease

Chloride				Potassium									
Urine, Mg. per 100 Cc.		Urine, Mg. per Kg. per Hr.		Blood Plasma, Mg. per 100 Cc.		Urine, Mg. per Kg. per Hr.		Urine Volume, Cc. per Min.		Hematocrit, per Cent Cells		Blood Urea, Mg. per 100 Cc.	
Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range
229	139-352	3.4 (0.096)	1.17-7.0 (0.033-0.197)	20 (5.13)	17-26.7 (4.36-6.85)	2.3 (0.059)	1.44-3.0 (0.037-0.077)	1.37	0.75-2.0	44.1	37.9-53.7	45.6	21-95†
293.4	229-356	3.48 (0.098)	1.09-8.7 (0.031-0.245)	21.5¶ (5.51)	18.8-29.5 (4.82-7.56)	2.72 (0.07)	1.13-8.58 (0.029-0.22)	1.13	0.36-1.51	46.2	40.7-54.7	....	.....
90	32-180	1.42 (0.04)	0.57-2.72 (0.016-0.077)	17.7 (4.51)	15.2-23.2 (3.9-5.95)	2.98 (0.076)	1.68-4.91 (0.043-0.126)	1.87	0.52-3.1	46.6	43-50.3	....	.....
54.2	17-141	1.23 (0.035)	0.61-2.4 (0.017-0.068)	18.4 (4.72)	14.5-26.2 (3.72-6.72)	3.51 (0.09)	1.01-11.1 (0.026-0.279)	3.10	0.52-6.2	47.4	42.8-54.6	....	.....
104.2	61-180	1.64	1.01-2.5	18.6	15.8-19.2	2.74	1.75-3.4	2.1	1.5-2.6	48.0	46.8-49.4	....	.....
63.3	31-133	1.46	1.0-2.3	19.3	15.7-21.9	2.85	1.0-3.8	3.2	0.52-6.1	49.6	47-51	....	.....
68	32-133	0.81	0.51-1.25	18.6	15.2-23.2	2.65	2.07-3.2	1.3	0.52-2.2	46	.....	....	.....
66	20-141	1.44	0.63-2.4	19 8	14.9-26.2	5.37	1.55-11.1	2.8	0.9-4.1	46	.....	....	.....
103	36-138	1.81	0.73-2.72	17.2	15.3-18.5	3.71	1.65-4.91	1.9	1.0-2.7	44.8	43-48.9	....	.....
44.3	17-77	0.8	0.61-1.0	16.3	14.5-20.1	2.71	1.12-4.3	2.1	0.82-3.8	45.5	42.8-54.6	....	.....
83.8	48-125	1.43	0.92-1.92	16.6	15.8-18.1	2.83	2-3.65	2.16	1.6-3.1	48.1	45.9-50.3	....	.....
43.7	23-137	1.23	0.65-1.83	18.1	16-21.6	3.13	1.7-4.7	4.3	0.69-6.2	47.3	45.5-49	....	.....

§ Numbers in parentheses represent milliequivalents.
¶ Represents blood specimens in middle of four hour period.

Blood Plasma Sodium.—The average value for sodium in the blood of subjects with Addison's disease was distinctly lower than the average for all other subjects. However, the range of values for the former widely overlapped the values found in the other subjects. This was true for the third day of examination as well as for the second day.

Hematocrit Determinations and Values for Blood Urea.—The hematocrit determinations indicated that the hemoconcentration which occurred during the interval between drawing of the first and second samples of blood was slightly greater in several of the subjects with Addison's disease than in those without Addison's disease. The values for blood urea were elevated in several cases of Addison's disease, so that the mean for this value was abnormal. However, the range of values both for hematocrit determinations and for blood urea extended far into the zone of values found in normal subjects.

Urine Sodium.—The mean value for the excretion of sodium, in terms of milligrams of sodium per kilogram of body weight per hour, in the urine for the twenty-four hours of the second day of examination was more than three times as great for subjects with Addison's disease as for those without; and in the urine of the four hour period of the third day this value was more than five times as great. The individual values for the

5. The constituents of this solution were held ready at all times for immediate use if necessary. One of the patients with Addison's disease developed symptoms of crisis in the afternoon of the second day. In this case, which is omitted from table 1, symptoms typical of the addisonian crisis were accompanied by an abnormally large excretion of chloride and sodium in the urine. The examination was brought to a close at 8 p. m. on the second day; the solution described was administered and promptly restored the patient to a satisfactory condition.

6. Chloride in plasma was determined by a slight modification of the method of Ancel Keys (The Microdetermination of Chlorides in Biological Materials: Presentation of a Method and an Analysis of Its Use, J. Biol. Chem. **119**: 389-403 [July] 1937), that in urine by the Volhard-Harvey titration, with the reagents of J. P. Peters and D. D. Van Slyke (Quantitative Clinical Chemistry: Methods, Baltimore, Williams & Wilkins Company, 1932, vol. 2, pp. 835-836). Sodium in plasma and urine was determined by the method of Butler and Tuthill (quoted by Peters and Van Slyke: Quantitative Clinical Chemistry: Methods, vol. 2, pp. 732-736), and potassium in plasma and urine by the chloroplatinate method of Shohl and Bennett as modified by Eva R. Hartzler (A Note on the Determination of Potassium by the Method of Shohl and Bennett, J. Biol. Chem. **122**: 19-20 [Dec.] 1937).

two groups showed very little overlapping. There was, however, some of it. On the other hand, when we limited attention to concentration (milligrams per hundred cubic centimeters) of sodium in the urine we found no overlapping of values in the four hour collection of urine of the third day. In this four hour collection the mean for the subjects with Addison's disease was 206.7 mg. per hundred cubic centimeters, with a range of values from 165 to 282, whereas the mean for all controls was only 22.4, with a range from 6 to 85.

Urine Chloride.—The statements relative to excretion and concentration of sodium in the urine apply also to chloride. Of greatest significance was the concentration (milligrams per hundred cubic centimeters) in the urine of the four hour collection of the third day, in which again there was no overlapping of values between the group of subjects with Addison's disease and the controls. In this specimen the mean value for subjects with Addison's disease was 293.4 mg. per hundred cubic centimeters, with a range of from 229 to 356, whereas the mean for all controls was 54.2, with a range from 17 to 141.

This tendency of patients with Addison's disease to excrete urine containing chloride in high concentration becomes even more apparent when it is considered that the concentrations of chloride and sodium in the blood of these patients were usually depressed. The relationship is illustrated in the accompanying chart.

Urine Potassium.—The excretion of potassium was slightly less in the subjects with Addison's disease, but much overlapping occurred between individual values for them and the values obtained for the controls. This

TABLE 2.—*Diet Employed in the Standardized Diagnostic Procedure*

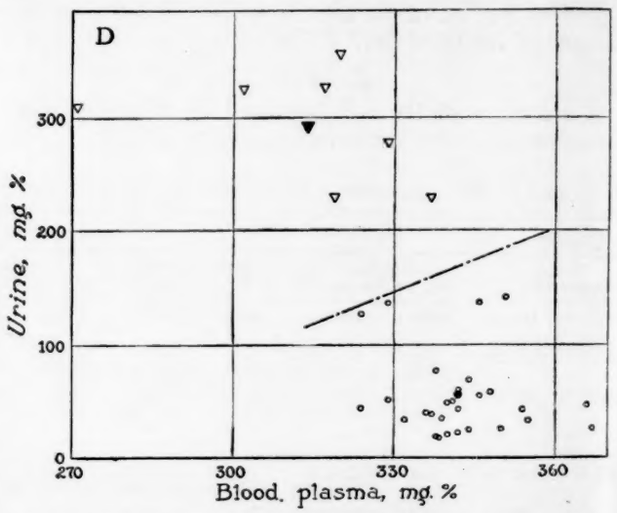
	Grams			Grams		
	Breakfast	Dinner	Supper	Potassium	Sodium	Chloride
Vegetables						
Canned tomatoes	...	90	...	0.27	0.01	0.34
Lettuce	...	10	10	0.06	0.005	0.015
Fruit						
Peaches	...	100	...	0.125	0.022	0.004
Orange	100	...	...	0.2	0.012	0.006
Grapefruit	...	...	100	0.2	0.004	0.005
Banana	...	...	100	0.400	0.034	0.125
Vegetables						
Canned peas	...	...	100	0.125	0.013	0.024
Baked potato	...	100	100	1.000	0.042	0.076
Bread, salt free	50	30	30	0.110	0.073	0.127
Jello	...	150	...			
Butter, salt free	10	10	10	0.003	0.021	0.049
Cream, 20 per cent	25	25	75	0.158	0.044	0.1
Milk	...	...	200	0.3	0.102	0.212
Coffee, medium	300	200	...	0.5		
Eggs	1	...	...	0.07	0.071	0.053
Beef, lean (weigh before cooking)	...	75	50	0.465	0.131	0.117
Jelly	20	20	20	0.076	0.008	0.002
Total				4.062	0.592	0.949

determination, although proving to be of little significance diagnostically, is of theoretic interest, showing in most cases that the kidneys in Addison's disease retain potassium even when excreting sodium excessively.

Urine Water.—The average volume of the urine in the group of subjects with Addison's disease was significantly smaller than that for the group of controls. The difference was greatest in the four hour period of the third day. Even for this specimen, however, considerable overlapping of individual values was encountered; the range for patients with Addison's disease was from 0.36 to 1.51 cc. per minute, that for the controls from 0.52 to 6.2.[7]

COMMENT

On the basis of observations in one case, the suggestion was made by Anderson and Lyall[8] that the finding of a concentration in the urine of more than 121 mg. per hundred cubic centimeters of chloride ion, when the concentration of plasma chloride is below the minimal normal level of about 320 mg. per hundred



Concentration of chloride in four hour collection of urine, morning of third day of deprivation of sodium chloride. Triangles represent Addison's disease; circles, controls.

cubic centimeters, would strongly suggest the presence of Addison's disease. The objection to their proposal, as we soon found, is that the plasma chloride in Addison's disease frequently is higher than 320 mg. per hundred cubic centimeters. Indeed, in our subjects it sometimes did not fall to that level even under the provocative conditions which we imposed. Our studies also showed that the figure 121 mg. per hundred cubic centimeters for the concentration of chloride ion in the urine is too low for the conditions we imposed. A few of our normal subjects had concentrations higher than this. Our results, however, do bear out the supposition that the excretion of chloride or sodium, under standard conditions of provocation, may serve as an index of the degree of normality of that function of the adrenocortex involved in electrolyte metabolism. The concentration of chloride in the urine on the morning of the third day of a period of deprivation of salt proved to be more significant, diagnostically, than the volume of urine, the concentration of potassium in the urine, the total amount of chloride, sodium or potassium in the urine, or the values or change in values of the chloride, sodium or potassium in the blood.

7. Marañon, Collazo and Perez (Metabolismo mineral y del agua en la enfermedad de Addison; la prueba del agua, Arch. de med. cir. y. especialid. **38**: 344-348 [May 30] 1935), all of whose papers in Spanish have not been available to us, have demonstrated retardation in the excretion of water in Addison's disease. The same has been observed by others in adrenalectomized animals. The patients of Marañon and Collazo, when deprived of food and water for fourteen hours and then given 1,000 cc. of water by mouth, excreted it tardily and in less than normal amount. The disturbance appeared to be proportional to the degree of severity of the disease. Our observations, under conditions more or less comparable, support theirs. However, the overlapping of individual values in subjects with and those without other evidence of adrenal insufficiency implies that volume of urine is less reliable diagnostically than concentration of chloride. The latter obviously is influenced by the volume of water excreted. With less excretion of water, concentration would be expected to rise. However, in adrenocortical insufficiency an additional factor seems to be engaged, so that excretions of chloride (and sodium) are out of proportion to those of water.

8. Anderson, I. A., and Lyall, Alexander: Addison's Disease Due to Suprarenal Atrophy with Previous Thyrotoxicosis and Death from Hypoglycemia, Lancet **1**: 1039-1043 (May 1) 1937.

A urinary concentration of chloride in excess of 225 mg. per hundred cubic centimeters, to judge from our observations, is indicative of some abnormality of adrenocortical function, whereas a concentration of less than 125 mg. per hundred cubic centimeters probably can be accepted as evidence of normality. Values for concentration between these two figures are inconclusive and, when obtained in any examination, a longer period of restricted intake of salt may be necessary for diagnosis. However, from our experience such intermediate values will be encountered infrequently.

The presence of complicating organic disease may militate against the diagnostic significance of urinary concentration of chloride. This will apply particularly to uncontrolled diabetes and to some forms of nephritis. It did not apply to the active tuberculosis present in seven of the control subjects in this study (three of them with fever) or to the five patients with other disease (one with fever).[9]

It must be emphasized that the conditions described for the preparation of patients and the conduct of their subsequent examination cannot be neglected, although further investigation may reveal that less rigid regulation will suffice. It also must be emphasized that restriction of sodium chloride and administration of potassium, while involving no apparent risk when the adrenal glands are normal, is a dangerous procedure under conditions of severe adrenal insufficiency. The diagnostic procedure we have instituted calls for relatively small doses of potassium and for a period of deprivation of salt of only fifty-two hours. Thus, it inflicts less risk of collapse than the six day period of restriction imposed by the procedure suggested by Harrop [10] in 1933 and modified by us in 1935.[3] Nevertheless, fifty-two hours of restriction of salt, even with small doses of potassium, carries some risk, and the examination of patients by this means must not be undertaken unless bed rest or at least room rest is enforced, continuous nursing attention is provided, and facilities are at hand for immediate intravenous injection in emergency of sodium chloride, sodium citrate and adrenal cortex extract.

OTHER DIAGNOSTIC PROCEDURES

Zwemer and Truszkowski [11] have proposed the giving of from 10 to 20 mg. of potassium per pound of body weight and at short intervals examining the effect of this on the level of potassium in the blood plasma. Gordon, Sevringhaus and Stark,[12] however, applying the procedure in cases of asthenia, in normal subjects and in cases of Addison's disease, found that "it failed to afford any consistent basis for distinguishing between these three types of subject." Another objection is the necessity for determining potassium in the blood plasma. This is a difficult and exacting analysis in any laboratory, and few clinicians or hospitals are equipped to do analyses for potassium. A great advantage in the diagnostic test we are proposing is that the only chemical analysis demanded is that of the urine for chloride, requiring a minimum of chemical experience and equipment.

The provocative procedure introduced by Harrop and his associates in 1933, and subsequently modified in the Mayo Clinic to control the intake of potassium, while highly reliable has proved hazardous, as recently was illustrated by a fatal accident reported by Lilienfeld.[13] The test originally was performed by subjecting the patient to a diet very low in sodium chloride, and the diagnosis was considered positive if symptoms of crisis developed, accompanied by subnormal values for sodium in the blood. The modification used in the Mayo Clinic since 1935 is as follows: On the first three days of the test the suspect is given a diet containing 4 Gm. of potassium, and potassium citrate is added to bring the total intake of potassium ion to 6 Gm. daily. On the next three days the total intake of potassium is raised to 9 Gm.

Injection of insulin, as a diagnostic procedure, has not been helpful. The rationale is the known hypersensitiveness to insulin of patients and animals with adrenocortical insufficiency. However, hypersensitiveness to insulin is not confined to conditions of adrenocortical insufficiency. The same statement applies to administration of epinephrine for diagnostic purposes.

The therapeutic test, based on the response of patients to treatment with injection of adrenal cortex extract, is completely unreliable, as has been emphasized by Kline.[14] One of his patients, with an asthenia previously "benefited" by treatment with adrenal cortex extract, had so little trouble with his adrenal glands that he was able to tolerate a nine day period of rigid restriction of sodium chloride. Later he was subjectively as well off as before, with injections of sterile water. A number of patients who under our observation withstood the six day provocative test supplemented by administration of potassium citrate came to us with a diagnosis of Addison's disease made elsewhere and the story of subjective improvement from treatment with "eschatin" or other adrenal cortex extract. Several of them seemed actually to have been benefited by the low intake of salt and large doses of potassium. To give adrenal cortex extract for long periods, unless indisputable evidence has been obtained of the existence of adrenocortical insufficiency, is wasteful of time, money and valuable material. There also is reason to believe that prolonged treatment with it may be injurious. The injection of adrenal cortex extract into normal rats in large doses quickly produces atrophy of the adrenal cortices.[15]

CONCLUSIONS

Under standardized conditions as described, the concentration of either chloride or sodium in the urine of patients with Addison's disease has been diagnostically more significant than any other factor examined, giving more valuable information than the volume of the urine,

9. Winkler and Crankshaw (Chloride Depletion in Conditions Other Than Addison's Disease, J. Clin. Investigation **17**: 1-7 [Jan.] 1938) have observed large excretions of chloride ion, associated with low values for chloride and sodium in the blood, in three subjects with pulmonary tuberculosis, one subject with carcinoma of the lung and one with arteriosclerotic heart disease. Low values for chloride in the serum were also found in thirteen additional subjects with pulmonary tuberculosis. The authors commented on the importance of this in the differential diagnosis of Addison's disease. The difference in the conditions we imposed makes it impossible to compare the rates of excretion of chloride observed by us with those found by Winkler and Crankshaw. The unreliability of the values for plasma electrolytes as a diagnostic criterion in Addison's disease has been recognized for some time by a number of observers. The finding of high values for nonprotein nitrogen and potassium, and of low values for chloride, sodium and sugar, is suggestive but not diagnostic. The absence of all these abnormalities does not exclude the existence of adrenocortical disease, and low values for chloride and sodium in the plasma, as is shown by our observations and those of Winkler and Crankshaw, occasionally are encountered in other diseases, and even in health.

10. Harrop, G. A.; Weinstein, Albert; Soffer, L. J., and Trescher, J. H.: Diagnosis and Treatment of Addison's Disease, J. A. M. A. **100**: 1850-1855 (June 10) 1933.

11. Zwemer, R. L., and Truszkowski, Richard: Potassium: A Basal Factor in the Syndrome of Corticoadrenal Insufficiency, Science **83**: 558-560 (June 5) 1936.

12. Gordon, E. S.; Sevringhaus, E. L., and Stark, Marian E.: The Use of Adrenal Cortex Preparations in the Treatment of Asthenia, Endocrinology **22**: 45-51 (Jan.) 1938.

13. Lilienfeld, Alfred: The Use of the Low Salt Diet in the Diagnosis of Addison's Disease, J. A. M. A. **110**: 804-805 (March 12) 1938.

14. Kline, E. M.: The Diagnosis of Addison's Disease, J. A. M. A. **108**: 1592-1593 (May 8) 1937.

15. Ingle, D. J.; Higgins, G. N., and Kendall, E. C.: Atrophy of the Adrenal Cortex in the Rat Produced by the Administration of Large Amounts of Cortin, Anat. Rec., to be published.

the concentration of potassium in the urine or the values or change in values during a fifty-two hour period of restricted intake of sodium chloride, of the chloride, sodium or potassium of the blood plasma.

The diagnostic procedure suggested requires fewer days for completion, subjects the patient to less risk of collapse, and in most cases is quite as informative as the six day period of restricted intake of salt heretofore resorted to for diagnostic purposes.

As the concentration of the chloride in the urine gives as important information as that of sodium, the analytic procedure demanded may be limited to analysis for urinary chloride. This represents a distinct advantage, because many clinics and hospitals are not equipped for analytic determinations of sodium or potassium.

Our conclusions are based on examinations of seventeen patients with Addison's disease and thirty-seven controls. The group of controls included ten healthy persons and twenty-seven patients with disease which apparently did not involve the adrenal glands.

FATAL TOXIC REACTIONS ASSOCIATED WITH TRIBROMETHANOL ANESTHESIA

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Whenever an anesthetic agent has enough good qualities to get it past an early trial period, it seems to take about ten years to evaluate its bad effects. So it is with tribromethanol (avertin) with amylene hydrate. This agent was prepared by Willstätter and Duisberg in 1926.[1] Since that time its sale has been widely promoted by commercial organizations. The term represents a solution of tribromethanol dissolved in amylene hydrate. The latter drug is also an active narcotic. According to Sollmann,[2] the effects together or separately of these two agents were not studied with the care that should be employed before an agent for general anesthesia is introduced. However, the drug gained a rather widespread popularity, notwithstanding a good many early deaths of patients under it. Enough time has elapsed and enough material is at hand to allow a reasonably accurate estimate to be made of the toxicity of this agent, to allow a consideration of whether its undoubted good qualities outweigh the bad.

The accompanying chart is based on all the cases, 3,934, in which avertin with amylene hydrate was used in the Massachusetts General Hospital[3] from the time the first patient was given it, in 1930, until Jan. 1, 1938. The drug quickly increased in use, as the chart shows, and its fall from favor in this hospital was equally rapid. It was never used here in any great proportion of the cases. In 1934, the year in which it was most used, it was administered 734 times. That year a total of 8,069 anesthesias were induced. At the peak of its use, the drug was used in less than 10 per cent of the cases in this hospital.

It may be interesting to consider the factors which have been chiefly responsible for this waxing and waning of popularity. At this date one's interest lies mainly in a consideration of the circumstances which have contributed to the lessened use of the drug. In order that these limiting influences may be presented in their proper perspective, it will be useful to stop for a moment and consider first the characteristics which led to its popularity.

REASONS FOR THE POPULARITY OF AVERTIN WITH AMYLENE HYDRATE

Probably the outstanding reason for the early success of the drug was that patients like it. Children and nervous adults who have to undergo anesthesia are subjected to a minimum of psychic trauma when this agent is used. Other outstanding reasons for its widespread use are: It is a convenient anesthetic when an operation in or around the airway must be undertaken. It gives quiet breathing and appears to depress the vagal reflexes, which may be very troublesome in intrathoracic operations. Neurosurgeons like it, for if it does not actually lower the intracranial pressure, as has been claimed,[4] it certainly does not elevate it as much as ether does. According to some authorities, a great advantage is that it allows minimal use of inhalation anesthetics. (This is, to say the least, a questionable advantage when it is gained at the price exacted; see the mortality rate hereafter.) The drug can be used by a novice and allows an inexpert or inexperienced person to give what appears superficially to be a "good ether." These are the chief reasons for its popularity.

REASONS FOR THE DECLINE IN THE USE OF AVERTIN WITH AMYLENE HYDRATE

1. *Variability of Response.*—The drug had been in use only a little while before it became apparent that patients reacted very differently to a given dose. A good reason for this variability was presented by Sebening.[5] Twenty patients underwent a rectal injection of a dilute solution of barium sulfate. The volume and the rate of injection were the same as in the case of avertin with amylene hydrate. The following results were observed by roentgen examination: In two cases the entire colon, including the cecum, was filled. The middle of the ascending colon was attained twice and the hepatic flexure four times. The middle of the transverse colon was attained four times and the splenic flexure seven times. In one patient the agent reached only the sigmoid flexure; the following day an injection did not pass the rectosigmoid junction. The causes of such variations are numerous. Important factors are anatomic variations, variations in tone and peristalsis of the bowel and variations in gas and fecal content. The rate of absorption depends largely on the height to which the injected fluid rises. It is an extremely important factor in the toxicity of the drug. A large dose slowly absorbed is not followed by toxic effects; a small dose rapidly absorbed may be. The relatively small difference in size between the usual clinical dose and

With the Approval of the Surgical Executive Committee and from the Surgical Services of the Massachusetts General Hospital.

1. Eicholtz, F.: Ueber rektale Narkose mit Avertin (E 107). Pharmakologische Teil, Deutsche med. Wchnschr. **53**: 710 (April) 1927.

2. Sollmann, Torald: A Manual of Pharmacology, ed. 5, Philadelphia, W. B. Saunders Company, 1936.

3. This includes the Baker Memorial Division.

4. J. E. Finesinger and Stanley Cobb (The Cerebral Circulation: XXXIV. The Action of Narcotic Drugs on the Pial Vessels, J. Pharmacol. & Exper. Therap. **53**: 1 [Jan.] 1935) have found that in cats under anesthesia induced by avertin with amylene hydrate the pial vessels are narrowed and the cerebrospinal fluid pressure falls. This confirms the results of Seevers and his associates,[6] who found that in dogs under this anesthesia the intracranial pressure is greatly lowered. In man they found that the venous pressure is lowered, and they implied that the drug must have a similar effect on the cerebrospinal fluid pressure. As a result of direct observations, however, W. J. Gardner and C. A. Lamb (Effect of "Avertin" on the Cerebrospinal Fluid Pressure, J. A. M. A. **96**: 2102 [June 30] 1931) stated that a moderate elevation of cerebrospinal fluid pressure is caused in man by this agent.

5. Sebening, Walter: Recent Researches and Clinical Advances in Avertin Narcosis, Anesth. & Analg. **11**: 145 (July-Aug.) 1932.

the lethal dose accentuates the importance of this variability in the rate of absorption.

2. *Rectal Irritation.*—With proper testing of the anesthetic solution immediately prior to its injection, rectal irritation should be trivial. I have seen one patient have transient diarrhea even though the solution had been tested with congo red immediately before use and was not decomposed. Occasionally other rectal irritations are reported.

3. *Prolonged Induction Period When an Inhalation Anesthetic Is Used as a Supplement.*—The induction period may be a hazardous time for the patient. The respiratory depression frequently experienced by patients under avertin with amylene hydrate results in a slow intake of the volatile anesthetic, for, as Haggard [6] has shown so well, the rate of induction of anesthesia (with a given concentration of inhalation anesthetic) depends directly on the volume per minute of air breathed. To be sure, this delay is of no great moment in many cases; but in those patients who have much sputum or an abnormal quantity of mucus, the delay in establishing a proper airway may be serious. Formerly, in this hospital in patients about to undergo lobectomy for bronchiectasis a basal anesthesia was induced by avertin with amylene hydrate. Before inhalation anesthesia adequate to allow the insertion of an intratracheal tube for bronchial aspiration had been obtained, the patient in some cases had passed through a dangerous condition of anoxia because of the partial obstruction of the airway from the purulent bronchial secretions.

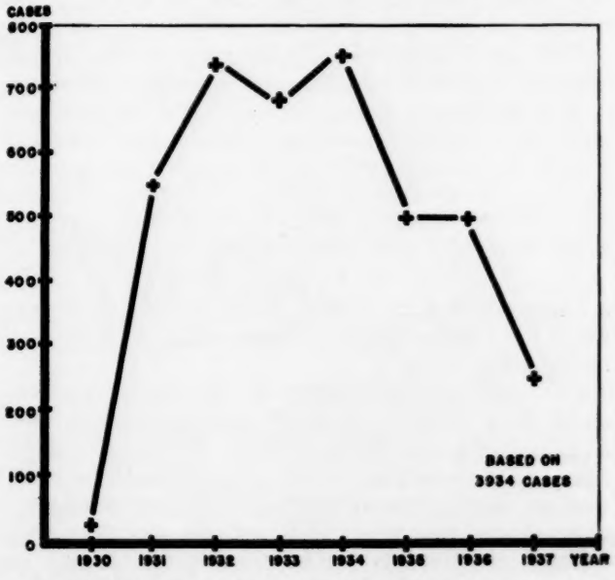
4. *Alarming Immediate Depression.*—This is usually transient, lasting from ten to thirty minutes. By the time the patient emerges from the anesthetizing room and comes into the surgeon's presence, he has as a rule partially if not completely recovered. It is impossible to say how much his ultimate recovery has been delayed by the initial period of low blood pressure and anoxia. One can be reasonably certain that this depression, even if transient, has reduced the patient's ability to withstand the tax of a major operation. It seems probable that if more surgeons saw such episodes they would be less keen in their enthusiasm for the agent. Unfortunately the depression is seen chiefly by the anesthetist, who may not report it or who, unhappily, may not even be aware of it if the anesthetization is carried out in a darkened room, as is frequently the case. The outstanding features of the depression are concerned chiefly with the respiration and the circulation.

The Respiration: The drug has a profoundly depressant effect on the respiratory center. This depression is greater than that occasioned by chloroform. Not only is the respiration slowed; it becomes shallow as well. The oxygenating power of the body is reduced. Anoxia and cyanosis result.

The Circulation: The force of the heart beat is weakened and the rate slowed. The fall in blood pressure which occurs is due to two main effects: direct cardiac depression and depression of the vasomotor center (Parsons,[7] Seevers and his co-workers,[8] Nowak,[9] Cushny [10] and Sollmann.[2] In case 6, reported hereafter, death may have been produced by ventricular fibrillation.

5. *Delayed Effects.*—Occasionally the effects described are prolonged or delayed. Not infrequently the patient is irrational or unconscious a long time. There is then danger that he will injure himself or acquire hypostatic pneumonia. There is the need for continuous, constant and intelligent nursing; it is not always available. In addition to the prolonged depression of the central nervous system, the kidneys and liver may suffer severe organic damage (cases 2 and 7).

6. *Numerous Contraindications.*—It has been learned, at the cost of a good many lives, that there are many contraindications to the use of avertin with amylene hydrate, notably hepatic and renal disease (these will be considered in "Comment"), heart disease, myxedema, conditions in which the oxygenating ability of the body is impaired (e. g., when the vital capacity is reduced or anemia is present), widespread sepsis, cachexia, inflammation, infection or ulceration of the intestine from any cause and old age.



The rise and decline in the use of avertin with amylene hydrate at the Massachusetts General Hospital.

7. *Impossibility of Efficiently Removing the Agent Once Toxic Effects Become Evident.*—This drawback is of course common to all the non-volatile anesthetics.

8. *The Fatalities.*—Soon after the drug was introduced there were a good many deaths of patients under it. The doses recommended were too large. After the early fatalities and the shift to the smaller doses now used, a body of arbitrary statements gradually developed. It is commonly said that children are never damaged by a dose of 100 mg. per kilogram of body weight and, further, that the anesthetic can safely be given to adults if the 80 mg. dose is not exceeded, provided the liver and the kidneys are normal. That these are dangerous statements is illustrated by the cases to be reported.

THE DEATHS

Of the eight chief causes for the decline in the popularity of avertin with amylene hydrate, the most important is the last one, the fatalities.

6. Haggard, H. W.: The Absorption, Distribution and Elimination of Ethyl Ether: V. The Importance of the Volume of Breathing, J. Biol. Chem. **59**: 795 (April) 1924.

7. Parsons, F. B.: Some Pharmacological Aspects of Avertin, Brit. M. J. **2**: 709 (Oct) 1929.

8. Seevers, M. H.; Waters, R. M., and Davis, F. A.: The Effect of Tribromethanol on Venous, Intra-Ocular and Intracranial Pressures, J. Pharmacol. & Exper. Therap. **42**: 270 (April) 1931.

9. Nowak, S. J. G.: Influences de l'alcool tribromoéthylique et de dérivés nouveaux de l'acide barbiturique (Malonylurée) sur la régulation automatique et réflexe de la pression artérielle et sur la respiration, Compt. rend. Soc. de Biol. **116**:642 (May) 1934.

10. Cushny, A. R.: A Textbook of Pharmacology and Therapeutics, ed. 8, Philadelphia, Lea & Febiger, 1936.

There are many difficulties in the way of evaluating deaths due to this anesthetic. There are always the complicating factors of the patient's disease and of his operation; and in many cases, though not in all, the drug has been supplemented by nitrous oxide, ether or both. If deaths occur when it has been supplemented by another anesthetic agent, it is necessary to rely on a series large enough to indicate whether or not the death rate is significantly increased when avertin with amylene hydrate is used; that is, whether it is increased above the rate for the supplementing agent.

The cases to be listed were chosen from a considerable number. A case was included only if death could not be attributed to any other cause; even then it was chosen only if toxic reactions occurred which appeared to be directly attributable to the avertin with amylene hydrate. The fact that the choice of this anesthetic was due to bad judgment in a given case was not taken as a valid reason for excluding that case. In the light of present knowledge, the choice appears to have been based on poor judgment in several of the cases.

This anesthetic has been widely used in the Massachusetts General Hospital as the anesthetic for intracranial operations, and a number of the patients have died under circumstances in which it has not been possible to distinguish between the effect of the anesthetic and of the patient's disease. The cases, 268, of tumor of the brain in which this anesthetic was used have accordingly been excluded from consideration.

These limitations in the choice of cases tend to give a conservative picture; even so, the serious toxic reactions were surprisingly frequent and the death rate unreasonably high.

One can have little patience with statements based on memory or on a series of cases published without an intensive search for and record of suspicious cases. Many of the surgeons in this hospital would have said that no deaths due to this agent had occurred here. Others are convinced that not all cases properly belonging in this list have been included. The aim has been to call attention to the variety of toxic reactions to the drug and to indicate as accurately and fairly as possible the order of the death rate due to this agent.

REPORT OF CASES

CASE 1.—*History.*—A white woman aged 81, a widow, entered this hospital first on May 12, 1931. Her history was typical of chronic cholecystitis. The edge of the liver was palpable 2 fingerbreadths below the costal margin, and the epigastric region was very tender. The only abnormalities were a coarse systolic murmur heard all over the precordium, a blood pressure of 190/120 and a positive reaction to the Graham test. The reasonable observation was made by the intern who examined the patient that she was a poor risk for ether anesthesia and that spinal anesthesia and avertin with amylene hydrate were contraindicated. For this reason and because of her age, the patient was discharged without operation, since she was not uncomfortable at the time.

Two and one-half months later, July 27, the patient was readmitted because of nausea and colicky pains in the right upper quadrant. At this time her blood pressure was 165/78 and her physical condition was otherwise unchanged. Operation was decided on.

July 30 the patient received subcutaneous preanesthetic injection of ⅓ grain (0.02 Gm.) of pantopon (the hydrochlorides of the alkaloids of opium, principally morphine) and 1/150 grain (0.0004 Gm.) of atropine. With considerable boldness the surgeon decided to use 100 mg. of avertin with amylene hydrate per kilogram of body weight rectally. He supplemented it with 50 cc. of 1 per cent procaine hydrochloride injected into the abdominal wall and light ether anesthesia induced by the drop method.

At the start of the anesthesia the blood pressure was 180/85. Ten minutes after the avertin had been administered the blood pressure had fallen to 120/60. The operation was delayed for forty minutes after the rectal injection had been made. Twenty minutes after it was started the blood pressure had fallen to one third of its initial value, that is, to 60/30. The anesthesia appears to have been chiefly responsible for this drop, for, notwithstanding the continuance of the operation, the blood pressure rose steadily from the low point, which occurred twenty minutes after the start of the operation, to 150/80 at the end. Presumably this rise coincided with partial detoxification of the avertin. A cholecystectomy with drainage was carried out.

The patient never regained consciousness. Two hours after the operation was completed the blood pressure began to fall. The record contains the note that the patient "gradually became more cyanotic." When the cyanosis began is not stated. Coarse tracheal rales developed eight and one-half hours after the avertin was given, and the patient died twenty-one and one-half hours after its administration.

Necropsy.—The smaller bronchi were filled with a bloody, frothy fluid. The lungs showed slight congestion and moderate edema in the upper lobes, with more marked congestion in both lower lobes. One or two small areas were present in the right lower lobe which suggested patches of early bronchopneumonia.

The heart was markedly contracted. Considerable arteriosclerosis was present in the cerebral, coronary and general arterial systems.

The arteries of the kidneys showed marked fibrous intimal thickening. An occasional glomerulus was completely hyalinized, with atrophy of some of the associated tubules and dilatation of others.

The cells of the liver showed a diffuse fine vacuolization.

The Brain: There was complete absence of cells in a considerable portion of the alveus of the cornu ammonis. The cytoarchitecture elsewhere was fairly well preserved. In the cerebral cortex, in the various parts examined, no Nissl granules were to be seen in the cell bodies of the processes, but the cells were filled with a fine, dustlike material, which gave them a homogeneous appearance and brought out the process more distinctly than is the case with normal cells when only Nissl granules are stained. The nuclei were pale, fairly round, possibly enlarged and usually central. Many of the nucleoli occupied an eccentric or even a peripheral position in the nuclei. Satellite cells were not increased in number. Some of the Purkinje cells of the cerebellum were small and pale. Their number appeared to be diminished. So far as the appearance of the ganglion cells was concerned, the possibility of an artefact had to be kept in mind, but the changes may have been caused by a toxic substance.

Anatomic Diagnoses: The diagnoses were arteriosclerosis, general, cerebral and coronary; bronchopneumonia, early; chronic vascular nephritis, benign type.

This was a case of early use of the drug, and today the patient would not be given avertin with amylene hydrate, for it was plainly contraindicated by her age, by her hepatic disease and by her hypertension.

The facts incriminating this drug are: The profound fall in blood pressure was obviously due to the anesthetic, since it occurred before the operation began and since, in spite of the operation, the blood pressure rose steadily and rapidly throughout the last hour to a reasonable level for the patient, 150/80; the patient failed to recover consciousness, even though the circulation remained in good condition for many hours after the anesthetic was given; at necropsy toxic damage to the brain was suggested. The impaired kidneys, it is now known, greatly increased the hazard. The

absence of any other adequate explanation derived from the necropsy points to the drug as the probable chief cause of death.

CASE 2.—*History.*—A white married woman, aged 36, a housewife, entered the hospital July 24, 1931, complaining of pain and "numbness" in the perineum and of urinary incontinence of three months' duration. She had no control of the anal sphincter. A bowel movement never occurred without an enema. Physical examination showed a well developed and obese young woman. The lungs and the cardiovascular system were normal. At entry the blood pressure was 146/100; three days later it was 130/60. The patient had a roughly saddle-like distribution of anesthesia. At entry a voided specimen of urine contained thick mucus, numerous red cells and a large trace of albumin, perhaps from the blood.

July 27, after preliminary subcutaneous medication with ⅙ grain (0.01 Gm.) of morphine and 1/150 grain (0.0004 Gm.) of atropine, the patient was given rectally a 90 mg. per kilogram of body weight dose of avertin with amylene hydrate. It was supplemented with ether. In the following hour the systolic blood pressure gradually fell from 130 to 88. The patient underwent laminectomy from the fourth lumbar to the first sacral vertebra, inclusive, and excision of a chondroma, which had compressed the roots of the cauda equina. Her condition at the end of the operation was considered to be "fairly good." In the two and one-half hours following the operation the patient's blood pressure declined further, to 75/45, and then gradually rose. During this period the pulse rate fluctuated between 100 and 130. She recovered from the operation, and a month after the operation, August 27, was discharged as "relieved."

About seven weeks later, October 15, the patient reentered the hospital, complaining of a severe pain in the back for the preceding month. She said that the numbness previously described had gradually cleared to a considerable extent. She still had no control of the bladder or of the anal sphincter. She suffered from marked constipation. The physical examination gave about the same results as at her previous entry. A hypesthetic area, sharply confined to the lower lumbar segments, was found. A specimen of urine obtained by catheter showed the "slightest possible trace" of albumin, rare red cells and numerous white cells. In seven determinations the specific gravity varied from 1.010 to 1.030.

A new block of the spinal canal was suspected, and a cisternal puncture with injection of iodized poppyseed oil was carried out November 9. She was having so much pain that use of a general anesthetic was necessary. As preanesthetic medication, ⅙ grain of morphine and 1/150 grain of atropine were used. An 80 mg. per kilogram of body weight dose of avertin with amylene hydrate was administered rectally. It was supplemented with the open administration of ether. But few significant data were recorded on the anesthesia chart. According to these the patient did not experience any untoward reaction. This procedure gave evidence of a block in the region of the third dorsal vertebra. Roentgenograms were taken with the patient under ether anesthesia November 13.

December 4 the patient underwent a third anesthesia, induced by an 80 mg. per kilogram of body weight dose of avertin with amylene hydrate. This was preceded by subcutaneous injection of ⅙ grain of morphine at 9 a. m. and again at 10:15 a. m. With the second injection of morphine, 1/150 grain of atropine was given. The avertin was administered rectally at 10:30 a. m. It was supplemented by nitrous oxide with oxygen and ether.

At the time the avertin was given, the blood pressure was 130/88 and the pulse rate 105. There was a steady, rapid fall in blood pressure, and forty minutes later, that is, five minutes after the operation was started, the blood pressure could not be taken and the pulse rate had risen to 158. For thirty minutes the blood pressure could not be determined. After injection of ephedrine one reading of 120/90 was made. In ten minutes the pressure had fallen to 95/80, where it remained until the operation was finished. The operation required one hour and twenty-five minutes. Laminectomy was carried out. A block of the spinal canal could not be found. The region of the spinothalamic tracts was incised. The patient was conscious when returned to her bed. She received a blood transfusion of 500 cc.

The patient appeared to make a satisfactory immediate convalescence from the anesthesia, except that there was practically no formation of urine. Four days after the operation determinations of the nonprotein nitrogen revealed a marked elevation, the content being from 66 to 83 mg. per hundred cubic centimeters. In the two days following, the content rose to 120 mg. The content of blood chlorides was reported as 561 mg. December 8 the icteric index was 20 and the red cell count 2,830,000; the hemoglobin content was from 55 to 60 per cent. The white cell count was 19,500 with 97 per cent polymorphonuclears. December 9 the serum protein content was reported as 4.5 mg. per hundred cubic centimeters.

Notwithstanding the use of diuretics, the patient formed scarcely any urine after her last operation. Uremic convulsions developed and she died eight and one-half days after the third administration of avertin with amylene hydrate in four and one-half months.

Necropsy.—Examination of the head was not made. Ecchymotic spots were scattered all over the skin. The wound was clean.

Lungs: The trachea and bronchi contained a moderate amount of frothy fluid. The lungs were markedly edematous. A large amount of frothy fluid could be expressed from the cut surface of the upper lobes. The cut surfaces of the lower lobes appeared congested, purplish red and of a doughy consistency.

Kidneys: They were enlarged and weighed 575 Gm. The capsular space of the glomeruli was wider than usual and filled with débris from inspissated urine. The capsule was not thickened. Many of the cells remaining in the tufts were necrotic. There were large collections of lymphocytes mixed with a few polymorphonuclears throughout the stroma. A few of the glomeruli were completely hyalinized. A limited and relatively symmetric portion of all the tubules, apparently in the Henle loops, showed swelling, pyknosis of the nuclei and desquamation.

Anatomic Diagnoses: The diagnoses were chondroma of the spinal cord, recurrent; acute nephrosis; bronchopneumonia, slight; edema of the lungs; cholelithiasis; hydronephrosis, slight.

After the patient's death it was learned that she had had convulsions at the time of pregnancy. During her stay in the hospital she had some infection of the urinary tract. With such a history, this patient would not be given avertin with amylene hydrate today.

It is impossible to say how much damage to the kidneys the patient had before the first anesthesia, as the preoperative sample of urine, containing red blood cells, was a voided specimen. From a consideration of the size of the kidneys and the microscopic picture it appears to have been slight. The renal shutdown, the acute nephrosis and the pulmonary edema appear to have been consequences of the anesthesia.

CASE 3.—A white married housewife, aged 56, entered the hospital Jan. 12, 1932, complaining of intermittent asthma of one year's duration, which had followed a "cold." She had had daily attacks for the preceding five months and required epinephrine four or five times daily. Physical examination showed that the heart was slightly enlarged to the left. An apical systolic murmur was present; the sounds were of fair quality; the blood pressure was 140/90. The peripheral vessels were definitely sclerosed. Examination of the lungs showed musical rales and prolonged expiration as the only abnormalities. Two specimens of urine contained the "slightest possible trace" of albumin; the sediment was not remarkable. A blood count showed 15 per cent eosinophils, 12,800 white cells, 5,280,000 red cells and 75 per cent hemoglobin. The nonprotein nitrogen content was 29 mg. per hundred cubic centimeters. The Hinton test was negative. The temperature was normal, and the pulse rate varied from 90 to 110. Roentgen examination revealed the presence of gallstones. January 22 the patient's heart and

lungs were reexamined and found to be "in good shape." That day she underwent operation, for, after considerable study, it appeared probable that an infected gallbladder was responsible for her asthma.

Preanesthetic medication of ⅙ grain of morphine and 1/150 grain of atropine was given subcutaneously. A 90 mg. per kilogram of body weight dose of avertin with amylene hydrate was administered rectally at 10:30 a. m., and ten minutes later the operation was started. The avertin was supplemented with "a little" nitrous oxide with oxygen. The operation, which consisted of a cholecystectomy with the removal of two gallstones, required only thirty-five minutes. The surgeon's record contains the note that "everything went well." The patient's respiration, pulse, blood pressure and color were normal throughout the operation. A half hour after the operation the blood pressure had fallen to 90/55, where it remained for some hours. By the following morning it had risen to 110/70.

About eight hours after the anesthetic was administered the patient was still considered to be in good condition, though she had not recovered consciousness.

The day after operation the unconscious patient was having "considerable typical asthma." The temperature had risen abruptly to 102 F. (rectally). Apparently she was considered to be in a satisfactory state except for the failure to recover consciousness. Twenty-four hours after the operation she began to be very cyanotic. This cyanosis was most marked in the extremities, especially the hands. It was relieved at once by use of an oxygen tent but returned promptly whenever the patient was placed in room air.

The next day, that is, two days after the operation, the respiratory rate rose sharply from normal to 35, and it climbed steadily to 48 in the succeeding twelve hours. During this time the pulse rate had risen to 160 and the temperature to 103.3 F. (rectally). On this day, forty-eight hours after operation, though no dulness could be detected, the chest was full of "bubbling, watery rales" (? pulmonary edema). The patient died sixty-four hours after administration of the anesthetic without regaining consciousness.

Postmortem examination was not allowed. The patient failed to recover consciousness, and it must be concluded that for some reason she was unable to detoxify the avertin with amylene hydrate though she appeared to be in good condition except for the unconsciousness for twenty-four hours. Pulmonary edema developed. Cyanosis, with peripheral stasis of blood, is a common finding when the circulation is impaired by toxic agents.

CASE 4.—*History.*—A white Canadian widow, aged 65, entered the hospital Jan. 15, 1932, complaining that she had had weakness and tarry stools for two weeks. Physical examination showed a pale, fairly well developed and moderately well nourished woman with normal lungs and a normal cardiovascular system. The blood pressure was 126/70. Abdominal examination revealed a hard, slightly tender mass in the epigastrium. The number of red cells varied from 1,650,000 to 2,100,000 and the hemoglobin content from 40 to 45 per cent. On smear the red cells appeared typical of secondary anemia. The urine showed from the "slightest possible trace" to a "very slight trace" of albumin; the sediment was not remarkable. The stools were bloody. The patient was given two transfusions before operation and two afterward.

January 22, after preanesthetic medication with ⅙ grain of morphine and 1/150 grain of atropine, 80 mg. per kilogram of body weight of avertin with amylene hydrate was given rectally. This was supplemented by nitrous oxide-oxygen and ether anesthesia. A partial gastric resection was carried out, and a leiomyosarcoma excised. A Billroth II anastomosis was made. In the ten minutes following rectal administration of the drug the blood pressure fell from 120/75 to 95/60, and it gradually subsided, so that after one hour it was 83/53. It then rose, so that by the end of a second hour, at which time the operation was completed, it was 95/60. The pulse rate twenty minutes after the avertin was administered had risen from 90 to 120. The respirations were shallow and slow, the rate being about 15 during much of the first hour; the rate rose to from 20 to 25 during the last hour of operation. The patient was considered to be in fairly good condition by the time the operation was completed.

The record for January 24 contains the rather ambiguous statement "Patient's immediate recovery from the operation two days ago was excellent, *but she has not been conscious.*" (The italics are mine.) Coarse tracheal rales were heard, and she was placed in an oxygen tent. Cyanosis was not observed. While it can appear when the blood contains only 30 per cent hemoglobin, it might easily have been overlooked with the degree of anemia present in this patient. The rectal temperature in the postoperative days fluctuated from 101 to 104 F., and the pulse rate remained around 120. The afternoon of the second day following operation the blood pressure began to fall, and the patient died sixty-one hours after the anesthetic was administered, without regaining consciousness.

Necropsy.—There was no evidence of peritonitis. The right pleural cavity contained 200 cc. of clear, colorless fluid. The right lung was "markedly edematous" and slightly congested. The left lung was "markedly edematous" and congested.

Kidneys: There were hyalinization of some of the glomeruli and considerable intimal thickening of the larger vessels.

Liver: Numerous macroscopic yellowish brown areas were scattered throughout the parenchyma. Microscopic examination showed slight central congestion.

Brain: No lesion of the brain was observed which might explain the clinical picture.

Anatomic Diagnoses: The diagnoses were sarcoma of the stomach; slight bronchopneumonia in the lower lobe of the right lung; edema and congestion of the lungs; hydrothorax, slight, on the right side; choledocholithiasis, ampulla of Vater; arteriosclerosis; chronic vascular nephritis.

There were edema and congestion of the lungs and chronic vascular nephritis. One can only speculate as to whether the nephritis significantly retarded the elimination of the avertin with amylene hydrate. Probably it did. There is a question also whether the marked anemia, in conjunction with the depressant effects of the avertin and the nitrous oxide used, did not produce cerebral damage due to anoxemia. Whatever the mechanism, it appears likely that the avertin was an important factor in this patient's death.

Several factors would now contraindicate the use of avertin with amylene hydrate in this case: the patient's age, her anemia and the possible damage to the kidneys (albuminuria).

CASE 5.—A white woman aged 64 entered the hospital April 10, 1933, complaining of intermittent pain in the right side of the face, which had lasted for nine years. The pain was brought on by eating, by cold air and by touching or washing the face. All three divisions of the fifth nerve were involved. Physical examination showed a well developed woman with normal heart and lungs. The blood pressure was 130/80. No abnormalities were discerned except that she was poorly nourished. The urine was normal except for occasional red blood cells in a voided specimen; the Wassermann reaction of the spinal fluid was negative; a roentgenogram of the skull showed nothing abnormal. The patient was sent home, where she was to remain until the malnourishment could be overcome. She returned in one month, May 11. At this time she was still rather poorly nourished. The urine showed a specific gravity of from 1.012 to 1.016. Two voided specimens contained "the slightest possible trace" of albumin. A few hyaline casts and red blood cells were found. One specimen contained granular casts. The red cell count was 4,200,000 and the hemoglobin content was 70 per cent.

On the morning of May 12 the patient was given a 70 mg. per kilogram of body weight dose of avertin with amylene hydrate. This was not supplemented either by preoperative medication or by other anesthetic agents. It was administered rectally. At the beginning of the anesthesia the patient's blood

pressure was 130/70; the pulse rate was 82. After the rectal injection the operation was delayed thirty-eight minutes. During this period the blood pressure fell steadily from its initial value of 130/70 to 70/40. The operation was started and at this time the blood pressure rose rapidly to 140/90, where it remained during most of the operation. The operation consisted of section of the posterior root of the right fifth nerve. This required fifty-nine minutes. By the time it was completed the blood pressure had fallen to 110/75 and the pulse rate had risen to 120.

The operation was described by the surgeon as "an easy one." There was practically no bleeding. To quote from the record: "Patient seemed in very good condition after the operation. She apparently recovered from the anesthetic (according to the nurse's notes the patient was conscious three hours after the operation was completed), though she was drowsy and confused. Then she became more comatose; the blood pressure fell steadily. Her condition became steadily worse until she died." Unfortunately many of the details of the postoperative period were not recorded. The temperature rose gradually for two days, to 104 F. (rectally), and the pulse rate rose to 125 before the respiratory rate had exceeded 24. In the twelve hours immediately preceding death the respiratory rate rather rapidly rose from 24 to 40. Death occurred sixty-four hours after the anesthetic was administered.

Clinically the death could not be explained. Those attending the patient considered it to be due to the anesthetic. Autopsy was not allowed.

The delayed rise in the respiratory rate, as well as the failure to detect pneumonia clinically, does not suggest that pneumonia was the explanation of this death. Clinically, sepsis was not found to be responsible. The patient's failure to recover from her drowsy and confused state immediately after the operation was not explained unless the anesthetic was responsible.

The patient's age and the probable impairment of her kidneys would today make the use of avertin with amylene hydrate undesirable.

CASE 6.—A Polish girl aged 12 entered the hospital June 15, 1935, with a diagnosis of arthritis deformans (Still's disease) of five years' duration. She complained of inability to walk because of the changes in her ankles and had been confined to bed for a year and a half. Physical examination showed a well nourished girl with marked deformities of the hands and feet. The cardiovascular system was normal; the blood pressure, 120/80. The urine was normal except for one specimen, which showed "a slight trace" of albumin; however, this was a voided specimen. The red cell count was 4,980,000; the hemoglobin content, 70 per cent. The differential count was normal. The white cell count was 11,300 on admission and a week later was 15,900. The stools were normal. The nonprotein nitrogen content was 20 mg. per hundred cubic centimeters. The Hinton test was negative. The temperature was normal.

July 12 the patient was given a subcutaneous injection of 1/12 grain (0.005 Gm.) of morphine and an 80 mg. per kilogram of body weight dose of avertin with amylene hydrate, administered rectally. Nitrous oxide with oxygen was used to supplement this drug. While the patient was under anesthesia both hands and wrists were manipulated. No significant changes occurred in pulse rate, respiratory rate, blood pressure or color. The surgeon's note states that "the patient stood the procedure well and left the operating room in good condition." She regained consciousness two and one-half hours after the avertin was administered. For three days after this manipulation her temperature rose to 100 F.; it was then normal for three and one-half days.

July 19 the patient was given a subcutaneous injection of 1/16 grain (0.004 Gm.) of morphine. This was followed in thirty-five minutes by a rectal injection of 80 mg. per kilogram of body weight of avertin with amylene hydrate. Before anesthesia the blood pressure was recorded as 90/58 and the pulse rate as 108. Ten minutes later these readings were essentially unchanged. Fifteen minutes after the avertin was administered it was supplemented with nitrous oxide and oxygen. Both ankles were manipulated. Suddenly, twenty minutes after the rectal injection had been given, the respirations became shallow and the patient cyanotic. The anesthetist was unable to determine the blood pressure, and the pulse could not be palpated or the heart sounds heard. Artificial respiration was started, oxygen under positive pressure being used. The patient took three or four convulsive inspirations and then stopped. There was no response to stimulants and the patient died. Autopsy was not allowed.

Though it cannot be proved, this case suggests that ventricular fibrillation was the cause of death (see "Comment").

CASE 7.—*History.*—A white single girl aged 19 entered the hospital July 6, 1937, complaining of recurrent substernal pain of over two years' duration. This nonradiating pain appeared most often during meals and occasionally woke the patient up at night. She vomited with the pain on two occasions but not in the year before entry. Examination showed a well developed, well nourished, healthy looking young girl who appeared normal. The blood pressure was 104/60. The urine and the blood count were normal. A Hinton test was negative. The temperature was normal and the pulse rate 80.

July 19, after preanesthetic medication with 1/100 grain (0.0006 Gm.) of atropine administered subcutaneously, the patient was given 80 mg. per kilogram of body weight of avertin with amylene hydrate rectally. At this time her blood pressure was 120/70, her pulse rate 100 and her respiratory rate 20. In eight minutes she was asleep. Ten minutes after the anesthetic had been given the blood pressure could not be taken. The respirations were slow and shallow. A few minutes later the pulse rate was 140. The respirations became regular and normal twenty minutes after the drug was administered. The blood pressure was 120/60 and the pulse rate 168 twenty minutes later. The pulse rate rapidly declined to 130. The avertin was supplemented with nitrous oxide and oxygen for a few minutes, and then ether and oxygen were administered. Because of the marked depression at the onset, the operation was delayed and did not get under way until one hour after the avertin had been given. The operation required two hours and twenty minutes. It consisted of uneventful removal of a neurofibroma of the mediastinum. No shock was present. The blood pressure persisted at about 135/85; the pulse was rather rapid, the rate fluctuating around 140 (from 130 to 155). The respiratory rate during operation was 40. Throughout the operation there was no sustained tendency of the pulse rate to rise or of the blood pressure to fall. Very little bleeding was encountered. When the patient was returned to her bed at noon she appeared to be in good condition.

An hour after the completion of the operation the blood pressure was still normal, 120/60, and the pulse rate was 132. During the ensuing afternoon and evening there was some fluctuation of the blood pressure, but for more than fifteen hours after the operation the systolic pressure never fell below 95. (At entry the systolic pressure was 104.)

About seven hours after the avertin was administered, the special nurse in charge of the case thought the patient was about to regain consciousness, for she stirred and seemed to be not deeply asleep. Eight hours after the drug was given she became restless, and the nurse gave her 1/3 grain (0.02 Gm.) of pantopon subcutaneously. This quieted her but did not have any other appreciable effect. At 10:30 p. m., some thirteen hours after the avertin was administered, she again became restless, and the nurse repeated the administration of pantopon. This time the patient's respirations became depressed and considerable cyanosis appeared. She appeared to recover gradually from this condition. She again became restless about five hours later, at 4 a. m., and the pantopon was given a third time. The patient's respirations then became very depressed and gasping. Marked cyanosis appeared, the pulse became weak and the blood pressure fell to 55/35. In about half an hour the pulse improved in character but became irregular; the cyanosis lessened. There was no evidence of cardiac tamponade. The blood pressure remained low. At 7 a. m. the day following operation the rectal temperature was 102 F. By 11 a. m. it had risen abruptly to 106.7 F.

Coramine injected intravenously improved the patient's respirations temporarily. Three transfusions of 500 cc. of blood were given without avail over a twenty-four hour period after the operation.

From eighteen hours after administration of the anesthetic until the patient's death thirty-four and one-half hours after the drug was given, she presented the appearance of a person responding to an overwhelming toxic agent. The blood pressure was low, the skin hot and dry and peripheral stasis of the blood marked. The skin was very cyanotic. Pressure areas remained blanched for some seconds. The clinical diagnosis at that time was streptococcic infection of the mediastinum. Material from the region was cultured after the patient's death but no infection found.

Necropsy.—The head and extremities were not examined. The right lung showed "very diminished aeration" and was "markedly congested" throughout. The left lung showed a moderate number of purplish, atelectatic lobular areas and was engorged. No evidence of consolidation was found. Microscopically, all the blood vessels and the alveolar capillaries were seen to be markedly congested. Most of the alveoli in the section were slightly atelectatic. The alveolar spaces contained an eosinophilic serous deposit, some monocytes (a few of which contain phagocytized brown pigment), a moderate number of red cells and some polymorphonuclear neutrophils. In one area the neutrophils were densely collected but without appreciable fibrin. Some of the bronchioles contained clumps of neutrophils.

Liver: Grossly, a few areas of yellowish mottling were seen on section throughout the parenchyma. Microscopically, the central and to some extent the midzonal portions of the lobules stood out sharply from the rest of the parenchyma. The hepatic cells were more eosinophilic, were vacuolated and for the most part were separated from one another so that they appeared to be floating as individual round cells. In a few places fibrin and a few neutrophils could be seen. The sinusoidal endothelium was well separated from the hepatic cells, and in some of the central areas there had been diapedesis of the red cells through it.

Kidneys: The convoluted tubules showed some cloudy swelling.

Rectum: In the ampulla a number of tiny, reddened, slightly vascular areas about 1 mm. in diameter were seen in the mucosa; these gave a somewhat peppered appearance. Microscopically, the most superficial layer of the epithelium was seen to have desquamated. One small area exhibited hemorrhage.

Anatomic Diagnoses: The diagnoses were pulmonary congestion and atelectasis, bilateral; congestion of the spleen; central necrosis of the liver, early.

For eighteen hours after the administration of the avertin with amylene hydrate the patient appeared to be in a satisfactory condition except for her failure to regain consciousness. The drug appears to have been responsible.

COMMENT

There is always, perhaps, a temptation to draw too many and too broad conclusions from material of this kind. It will be useful, however, to consider the common features of these cases.

Six of the seven patients who died [11] showed an immediate depression after avertin with amylene hydrate was given. In the seventh the depression did not appear until the end of a short operation. Cyanosis was frequently recorded. Only one patient of seven recovered full consciousness; one other was at best drowsy and confused; five did not recover consciousness. Pulmonary edema was a terminal feature in half the cases. In three cases (2, 6 and 7) the condition appears strikingly reminiscent of damage due to chloroform, and, one is compelled to add, it is reminiscent also of fatal anoxia.

The suspicion that tribromethanol and chloroform produce similar toxic effects is not new. Tribromethanol, the chief anesthetic agent in avertin with amylene hydrate, bears the same relationship to ethyl alcohol as chloroform bears to methane. In the case of both methane and ethyl alcohol the anesthetic action has been greatly intensified by the substitution of three halogen atoms for three hydrogen atoms. It is possible that many of the toxic effects of chloroform can be attributed to hydrochloric acid, which may be formed when chloroform is destroyed. It is not unreasonable to suppose that when tribromethanol is broken down hydrobromic acid may be formed and produce effects somewhat similar to those produced by hydrochloric acid. Traces of bromine have been found in the breath and the sweat after the administration of avertin (Parsons [12]). The drug is generally believed to be detoxified in the liver by conjugation with glycuronic acid and then excreted as a complex organic compound of bromine.

It has been assumed that the chloroform-like toxic effects are produced only by large doses. That this is not the case is shown by the data presented here. While much dwelling on the chloroform analogy is not justified by the evidence at hand, there are clinical as well as theoretic data to suggest that the observed similarities in effect are more than chance.

Chloroform notoriously produces death by acute damage in three regions of the body: ventricular fibrillation in the heart, tubular damage in the kidneys, and central necrosis in the liver.

Death from ventricular fibrillation has never been proved in a human subject who died under chloroform anesthesia; yet ever since Goodman Levy [13] showed, in his classic studies of death from ventricular fibrillation in animals under chloroform anesthesia, that the clinical observations in man and in animals are so similar, it has been assumed that the patient who dies under light chloroform anesthesia dies of ventricular fibrillation. In case 6 the circumstances preceding and during death, especially the sudden cardiac standstill apparently before the respiration failed, strongly suggest that ventricular fibrillation was the cause of death.

In case 2 the anesthetic produced tubular damage to the kidneys like that caused by chloroform. In case 7, in which there was early central necrosis in the liver, the damage in this region was like that due to chloroform.

Attention should be drawn to the fact that the great majority of the cases reported here describe the use of avertin with amylene hydrate in adults. Children appear to tolerate the drug better than adults. However, the death in the 12 year old patient reported here is a reminder that children are not immune to the toxic effects of the drug.

It is useless to consider mortality figures for a given anesthetic in any but the most general terms. The data usually presented describe not the total death rate, which may not permit accurate evaluation, but rather how often the circulation fails and sudden death occurs. (For example, the role of the anesthetic in causing

11. Curiously, all the patients who died were women, yet there were a few more men than women in the series. An analysis of 500 of the cases spread out over the entire list suggests that the types of operation were comparable for the two sexes. Statistically this appears significant; however, it seems probable that some other explanation is the correct one. It will be interesting to check the point in other series.

12. Parsons, F. B.: Avertin, Canad. M. A. J. **24**: 59 (Jan.) 1931.

13. Levy, A. G.: Sudden Death Under Light Chloroform Anesthesia, Proc. Physiol. Soc., J. Physiol. **42**: iii (Jan.) 1911; Chloroform Anesthesia, London, John Bale, Sons and Danielsson, Ltd., 1922.

death from postoperative pulmonary complications has never been satisfactorily demonstrated.) So it is with the data presented in this paper. The deaths attributed to avertin with amylene hydrate and included here have been chosen conservatively.

Means chosen from numerous statistical studies suggest that comparative data on mortality would appear approximately as shown in the accompanying table.

It is probable that any agent which produces fatalities with the frequency of avertin with amylene hydrate must injure a great many patients whose injuries go undetected or are attributed to the patient's disease.

The ratio of one death in 500 cases cannot be considered in any precise mathematical sense. A series many times larger than the 3,666 cases considered here would be necessary to give the ratio anything like a literal value.

If four of the cases included here were eliminated from consideration because today the contraindications would be recognized and the drug not administered, the death rate would be in the ratio of one death to 1,200 cases.

Comparative Death Rates

Nitrous oxide.....	1: 50,000 (including short cases)
Ether	1: 5,000
Cyclopropane	1: 3,500
Chloroform	1: 2,000
Spinal anesthesia.....	1: 1,500
Avertin with amylene hydrate	1: 500 (7 deaths in 3,666 * cases) or 1: 1,200†

* Excluding cases of tumor of the brain.

† Excluding four cases in which this anesthetic would be plainly contraindicated today.

The point remains: avertin with amylene hydrate makes a poor showing even when compared with a toxic agent like chloroform. It appears to be more dangerous than the discredited chloroform.

SUMMARY

In eight years avertin with amylene hydrate was used at the Massachusetts General Hospital in 3,934 cases. Though the use of the drug has waxed and waned in this period, it was never used in more than 10 per cent of the cases in which anesthesia was employed. Eight factors have been chiefly responsible for the lessened use of the drug. Seven deaths were associated with its use. According to the mortality rate, considered in its relation to the death rate for other common anesthetic agents, avertin with amylene hydrate appears to be more toxic than chloroform.

The Thalamus and Emotion.—The supposed evidence that the thalamus adds the affective or emotional character to sensations breaks down completely when subjected to critical analysis. The affective changes resulting from thalamic lesions are restricted to a small group of somesthetic sensations and cannot be interpreted as a general change in affectivity. The changes correlate definitely with the special properties of conduction, summation, and irradiation of this group of sensory processes and not at all with a specific locus in the thalamus. The pathological changes following thalamic lesions are primarily in the character of sensations, in intensity, duration, localization, and are therefore not relevant to the problem of affect. There is no evidence whatever that the thalamus contributes facilitative impulses which might form a basis for the motivational aspects of emotion.—Lashley, K. S.: The Thalamus and Emotion, *Psychol. Rev.* **45**:42 (Jan.) 1938.

CONCENTRATED HUMAN BLOOD SERUM AS A DIURETIC IN THE TREATMENT OF NEPHROSIS

PRELIMINARY REPORT

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The treatment of nephrosis has been especially interesting to clinicians because in this disease edema is usually found without complicating cardiac or arterial lesions. Comparatively recently it has been realized that in nephrosis the kidney need not be severely or irreparably damaged and that, even in the stage of greatest disturbance in water excretion, tests for renal function may give approximately normal results. Such observations have stimulated search for therapeutic agents acting elsewhere than on the kidneys in patients with this condition.

Thus, on the hypothesis that nephrosis might be due to a metabolic disturbance involving the thyroid gland, thyroxine and thyroid extract have been used, with results which at times have appeared promising. Likewise, because it was conceived that a sort of "diabetes albuminuricus" might explain the phenomena of nephrosis, high protein diets were tried, with enough success to warrant their use in most clinics. The theory has been stressed that the water balance between the blood vessels and the tissues is disturbed because of the prolonged loss of plasma protein through the kidneys. However, not one of the many explanations offered has been entirely satisfactory in accounting for all the clinical manifestations or in establishing the exact pathogenesis of nephrosis.

A phenomenon of great interest to clinicians at the present time is the loss of serum albumin in nephrosis. While all the plasma protein fractions are reduced, the most marked loss occurs in the albumin fraction, and this results in a reversal of the albumin-globulin ratio. Since the albumin molecule is much smaller than that of the globulin and therefore more important in the maintenance of colloid osmotic pressure, this marked reduction in the albumin fraction reduces the pressure of the blood plasma to a considerable extent, thus theoretically accounting for an escape of water into the tissues.

Although the foregoing explanation appears logical, critical studies of the blood serum made just before and just after diuresis have shown no measurable increase in the albumin. It seems probable, therefore, that this change in plasma proteins is but one of several factors responsible for the edema.

Dr. Killingsworth is fellow of the Otho S. A. Sprague Memorial Institute.

Aided by a grant from the lyophile serum fund of the Abington Memorial Hospital.

From the nephritic services of the Children's Memorial Hospital of Chicago and the Children's Hospital of Philadelphia.

Dr. Joseph Calvin and Dr. H. H. Boyle allowed us to treat their patients, and Dr. Gladys Dick and Dr. Sidney O. Levinson of the Samuel Deutsch Serum Center gave us technical assistance in preparing portions of the serum.

Because of the loss of serum albumin and of its possible significance in reducing the water excretion, many substances have been injected into the blood stream in an attempt to increase its power to hold water and to remove it from the tissues. Among these have been hypertonic solution of dextrose and of sucrose, solution of acacia, whole blood, and hypertonic salt solution. Although some help has been obtained from these agents, not one of them has proved uniformly and continuously successful.

In the case of whole blood, the amount it is possible to inject is limited by the fact that, as a rule, before sufficient protein can be given an excess of red blood cells is provided. However, it has been noted that a relatively small transfusion often seems to initiate a sizable diuresis.

During the past few years our attention has been called to the possibility of treatment with blood serum alone. During this time large doses, 100 cc., of convalescent scarlet fever serum were given intravenously at the Children's Memorial Hospital to nephrotic patients who had pneumococcic peritonitis as a complication (to be reported elsewhere). It was frequently observed that, in addition to an immediate drop in temperature, spectacular diuresis was obtained. The explanation for this result was not obvious. It was felt that it might be an immune reaction, an antitoxic effect or possibly a replacement in the blood of some deficient factor.

With the development of the lyophile process by Flosdorf and Mudd[1] in 1934, a method was made available not only for the preservation of serums and other biologic materials but for the concentration of such products. The lyophile process consists essentially in the vacuum dehydration of material previously frozen at a low temperature in a bath of carbon dioxide ice and a commercial solvent. Serum processed by this method becomes a dry, porous powder which may be redissolved in one fourth or less of its original volume of water or serum. When large amounts of serum were to be stored for intravenous use, it was necessary to obtain pools of serum from many adults. This serum was then processed in pools, redissolved, filtered for the removal of fat globules and again processed, after which it was safe for intravenous use in fourfold concentration.[2]

From the earliest development of this method it was obvious that such concentrated serum had many possible uses. Among these uses, the restoration of serum protein values and the raising of the oncotic pressure of the blood serum for its dehydrating effect on localized or generalized collections of extracellular fluid were perhaps the most obvious. In order to test the therapeutic possibilities of such concentrated serum, two types of patients were selected at the Children's Hospital of Philadelphia: infants with hydrocephalus (reported elsewhere[3]) and children with lipoid nephrosis and edema.

Our observations provided us with a logical reason to attempt the administration of larger or more concentrated doses of serum, after which consultation between the Philadelphia and the Chicago authors took place and resulted in this combined study.

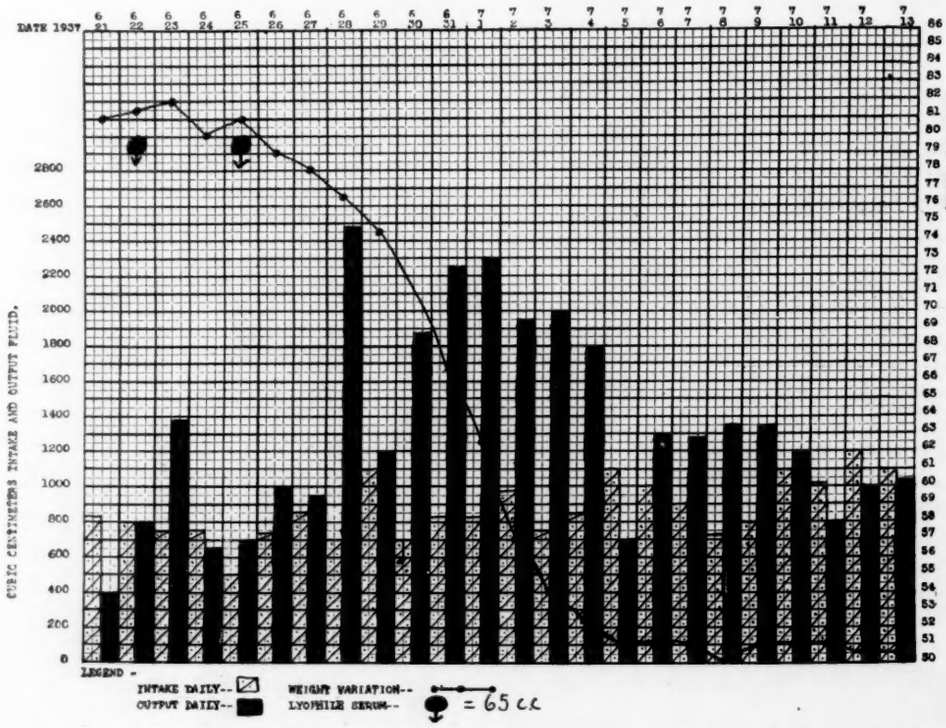

Fig. 1 (case 2).—Complete diuresis, with loss of 32 pounds (60 per cent of normal weight) in two weeks. Two small injections were given. The patient completely recovered, and the urine was normal.

REPORT OF CASES

The following case reports refer strictly to patients with nephrosis. We were able to treat one patient with mild and eight patients with advanced nephrotic edema. In none of the hundreds of urinalyses made for these patients were enough red blood cells found to produce a positive benzidine test on the centrifuged sediment, as such an observation in our clinics would rule out the diagnosis of nephrosis. Tests of renal function except for excretion of water were approximately normal in all but case 6. There was evidence that secondary renal damage was occurring in the kidneys of this patient after many years of illness. All the patients except the first presented marked anasarca. All presented marked albuminuria and cylindruria not associated with elevation of the systemic blood pressure. Clinical observations are therefore omitted from the case reports.

CASE 1.—A. C., a girl aged 6 years, was admitted to the Children's Hospital of Philadelphia Jan. 8, 1937, with slight edema of the eyes and the ankles. She had typical nephrosis,

1. Flosdorf, E. W., and Mudd, Stuart: Procedure and Apparatus for Preserving in "Lyophile" Form of Serum and Other Biological Substances, J. Immunol. **29:** 389-425 (Nov.) 1935.

2. Mudd, Stuart; Flosdorf, E. W.; Eagle, Harry; Stokes, Joseph, Jr., and McGuinness, Aims C.: The Preservation and Concentration of Human Serum for Clinical Use, J. A. M. A. **107:** 956-959 (Sept. 19) 1936.

3. Several infants with hydrocephalus were treated with marked reduction of intracranial tension lasting many weeks (Hughes, Joseph; Mudd, Stuart, and Strecker, E. A.: Treatment of Increased Intracranial Pressure by Concentrated Human Lyophile Serum, Tr. Am. Neurol. A. **62:** 118-123, 1936).

which had been treated for four years by different methods. During this time she had undergone repeated attacks of major edema.

On January 15 she was given 25 cc. of three times concentrated human serum intravenously. In four days she lost all the edema, 2 pounds (907 Gm.). She then began to gain in weight, and on January 23 she was given 125 cc. of whole

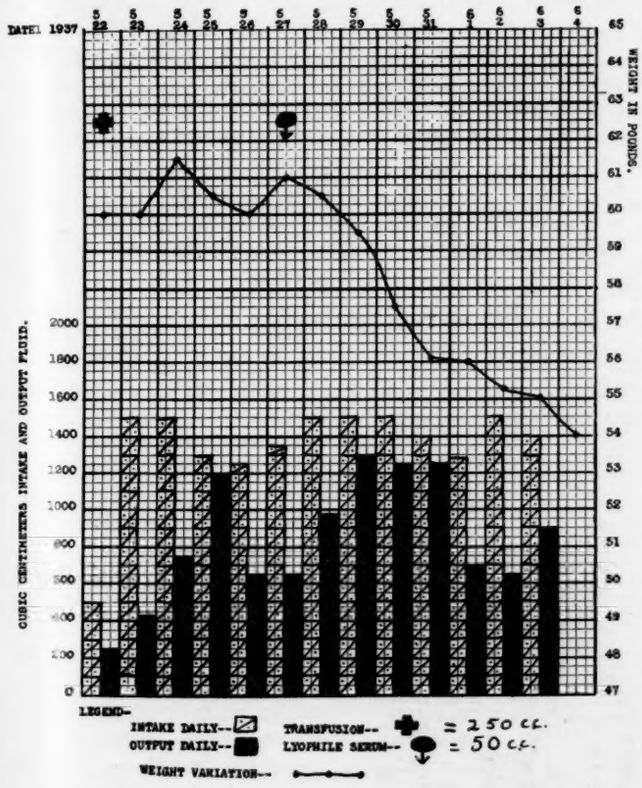

Fig. 2 (case 3).—Complete diuresis, with loss of 7½ pounds (23 per cent of normal weight), following transfusion of 250 cc. of blood and one injection of lyophile serum. The patient made a complete recovery, with normal urine, in one month and is clinically well at the time of writing.

blood serum, with no perceptible change in her weight. Two days later 35 cc. of four times concentrated serum was administered, after which she again lost all her edema. She remained edema free until discharge from the hospital, but her subsequent course is not known. No change in serum proteins was noted.

CASE 2.—M. Y., a girl aged 8 years, was admitted to the Children's Memorial Hospital on April 13, 1937, with the usual symptoms of nephrosis. This was her first attack. There was a continuous gain in weight for forty-two days, her weight increasing from 64 pounds to 82 pounds (29 to 37 Kg.), and various treatments were tried ineffectually.

On May 23, 65 cc. of four times concentrated human serum was given intravenously. After a slight loss in weight (fig. 1), the weight again rose, and accordingly the dose was repeated on May 25. Complete diuresis, with the loss of 32 pounds (14.5 Kg.), followed. The patient was discharged in good condition except for albuminuria on June 16.

She remained symptom free for six weeks and then had a less severe attack of edema, resulting in spontaneous diuresis. After this attack the albumin gradually disappeared and she remained clinically well.

CASE 3.—C. P., a boy aged 7 years, had the typical picture of nephrosis May 1, 1937. After three weeks' observation at home, he entered the Evanston Hospital on May 22. On this day a transfusion of 250 cc. of whole blood was given. The weight fell somewhat but again increased, and on May 27 he was given 50 cc. of four times concentrated serum intravenously. Prompt complete diuresis, with the loss of 8 pounds (3.6 Kg.), followed. The albuminuria slowly decreased, and on August 2 urinalysis gave negative results. At the time of writing the patient is clinically well (fig. 2).

CASE 4.—A. M., a Negro girl aged 4 years, was admitted to the Cook County Hospital on June 24, 1937, with nephrosis. Through Dr. Joseph Calvin, we were permitted to treat her with 80 cc. of four times concentrated serum intravenously on June 28. Prompt and complete diuresis followed, with a loss of 7 pounds (3.2 Kg.) in weight. Within one month the urine became normal, and it has remained so.

CASE 5.—G. B., a boy aged 11 years, was admitted to the Children's Memorial Hospital July 14, 1937, with nephrosis. He had been under observation since February 27, both in the hospital and in the dispensary. In addition to the nephrosis, he had definite hypothyroidism. It had been found that the administration of from 2 to 3 grains (0.12 to 0.18 Gm.) of thyroid extract daily would control his tendency toward edema. One week before admission the thyroid medication was discontinued, with the result that he gained 7 pounds (3.2 Kg.) in weight in edema fluid. On the day of entrance he was given 65 cc. of four times concentrated serum intravenously and no other treatment. In the next seven days he lost all this accumulated fluid in complete diuresis. He was then kept edema free by means of 3 grains of thyroid extract administered daily (fig. 3).

CASE 6.—F. M., a Negro girl aged 5 years, with nephrosis, who had been observed most of the time since 1935 in the Children's Memorial Hospital, had recently shown signs of secondary renal sclerosis, marked reduction in renal function, fixation of the specific gravity in the low range, retention of

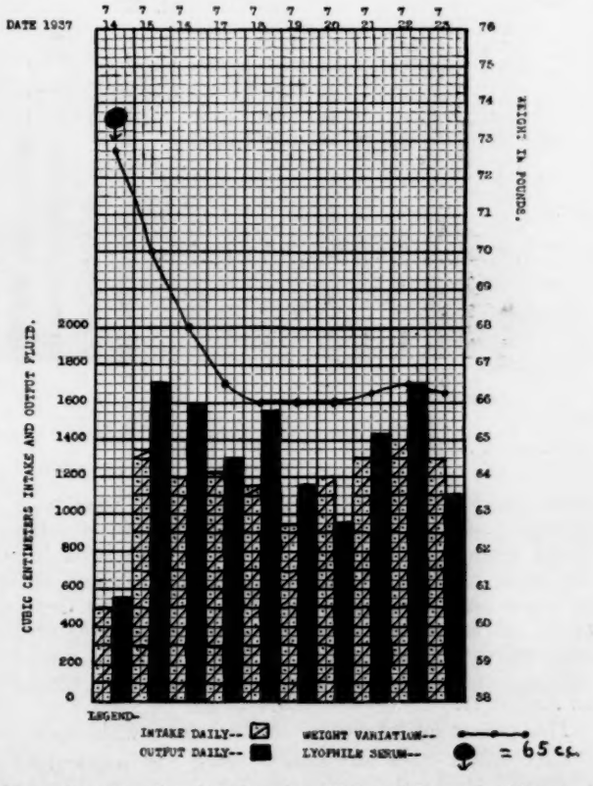

Fig. 3 (case 5).—Complete diuresis, with loss of 7 pounds (10 per cent of normal weight), following one injection of lyophile serum. The fluid eliminated had accumulated through interruption of thyroid medication; the patient was definitely hypothyroid in type.

nitrogenous substances, increased blood pressure and an unusual disturbance in her mineral metabolism, with a reduction of the blood. On July 3 and 8 she was given injection of 65 cc. She also had glycosuria without hyperglycemia.

While edematous, though still in a stable state of water balance, she was given on June 22, 1937, a transfusion of whole blood. On July 3 and 8 she was given injections of 65 cc.

of four times concentrated serum intravenously. No perceptible effect was noted on the weight or the urinary output. At the time of writing she is unimproved and is being observed in a convalescent home (fig. 4).

CASE 7.—J. F., a white boy aged 6 years, with nephrosis, had been observed in the Children's Memorial Hospital for a period subsequent to July 11, 1934. On July 7, 1937, he was readmitted with an infected throat and generalized edema. On July 7, 9, 15 and 28 he received 65 cc. of four times concentrated serum intravenously. The chart shows a possible delayed response, but since edema persisted we cannot be sure of any beneficial result. No more serum was available. The patient afterward died of septicemia with pneumococcic peritonitis. Autopsy showed the typical appearances of lipoid nephrosis in addition to those of the terminal infection.

CASE 8.—N. T., a boy aged 3 years, was admitted to the Children's Memorial Hospital with nephrosis of one month's duration. On July 26, 1937, he was given 65 cc. of four

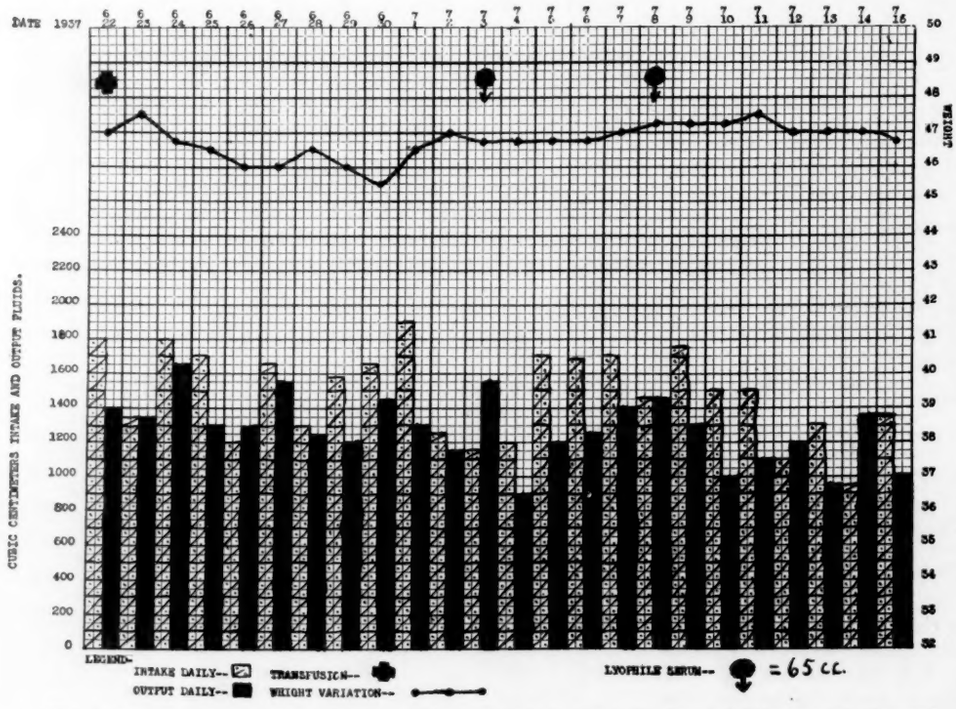

Fig. 4 (case 6).—No response to therapy. The patient had secondarily damaged kidneys, with glycosuria and impaired mineral metabolism.

times concentrated serum intravenously. Two days later the symptoms of peritonitis developed, and erysipeloid cutaneous lesions appeared on the thighs and the abdomen. On July 30, 100 cc. of convalescent scarlet fever serum was injected with 65 cc. of concentrated blood serum. The pain and fever subsided, but no diuresis occurred. The administration of concentrated serum was repeated on August 5, in the same dose, with no benefit. An abdominal paracentesis gave some relief on August 11.

This patient finally died in another attack with sepsis.

CASE 9.—G. P., a girl aged 3 years, was admitted to the Children's Memorial Hospital on Feb. 7, 1938, with a typical history and symptoms of nephrosis, which began the first week of January. During the succeeding two months she gained approximately 15 pounds (6.8 Kg.) in spite of various efforts to reduce her edema. Two days after admission she was given a transfusion of 150 cc. of whole blood, after which her weight increased 3½ pounds (1.5 Kg.). On February 25 she was given 30 cc. of four times concentrated lyophile serum, and a second injection of 20 cc. of the same material was given on February 26. Diuresis, which resulted in a loss of 10 pounds (4.5 Kg.), began after the first injection. She was discharged edema free on March 2, 1938, having lost 10 pounds, approximately 30 per cent of her normal weight, in edema fluid. All symptoms of nephrosis have since disappeared and the urine is normal.

TECHNIC OF ADMINISTRATION

The lyophile serum is distributed in sterile bottles marked as to the number of cubic centimeters of serum from which the dried powder was derived. It had previously been found that this powder could be dissolved in one fourth its original volume of distilled water. This was the concentration used in our first cases. Later it was found that the same amount of compatible blood serum would dissolve the powder, so that a concentration of five times could be used. This made a thick, honey-like, syrupy solution, which could be injected directly with little difficulty by means of what we designate in our hospitals as a "scalp transfusion" set (fig. 5) or with a simple 30 or 50 cc. Luer syringe. The size of the needle used depended on the caliber of the patient's vein, a 20 or a 22 gage needle usually being satisfactory. Occasionally, owing to the massive edema present, it was necessary to cut down on either the great saphenous vein at the ankle or on one of the veins in the cubital fossa. However, the superficial jugular vein may be used safely.

The concentrated serum was injected slowly, not more than 5 cc. a minute. When a reaction occurred with the first dose of serum, all subsequent injections contained from 3 to 5 minims of solution of 1:1,000 epinephrine hydrochloride. It is necessary to state here that care must be exercised to prevent this concentrated serum from escaping into the tissues, as it is quite painful, causing rapid and intense local swelling at a site at which it is spilled. The serum when accidentally injected into the tissues caused no necrosis or slough. Venous thrombosis did not follow the injections.

Because there are often large fat globules in the lyophile serum, it is safer to pass it through a coarse filter (Berkefeld N) to prevent the possibility of fat embolism. All serum should be freshly prepared with distilled water or compatible serum and used immediately.

It was felt that until the proper dose was determined by experience it would be safer to use frequent small injections. Accordingly, we did not in this series exceed 80 cc., or the equivalent of about 320 cc. of normal serum. It was noted that even this small amount apparently induced diuresis in some of the patients.

Reactions to the serum were usually mild and febrile and lasted for only a few hours, although in two cases sharp reactions accompanied by chills and high fever were seen.

COMMENT

Critical study of the use of this method seems to indicate that some diuretic effect results from the intravenous injection of human lyophile serum as we used it. It is equally obvious that the method used is not completely satisfactory, as the treatment failed in three of our nine cases. These failures may be dependent on the severity of the condition, inadequate dosage or an unknown complicating factor.

Serum Protein Values Taken Before and After Administration of Lyophile Serum

Case No.	Amount of Serum Used, Cc.	Total Proteins *		Albumin		Globulin	
		Before	After	Before	After	Before	After
2	130	3.3	3.79	1.4	1.7	1.9	2.09
3	50	3.67	4.27	1.86	1.66	1.81	2.61
4	80	5.35	6.1	2.72	4.0	2.63	2.1
5	65	3.5	4.7	1.6	1.7	1.9	3.0
6	130	4.2	4.4	2.1	2.0	2.1	2.4
7	195	3.6	2.9	1.7	1.2	1.9	1.7
8	315	2.8	3.4	1.1	1.2	1.7	2.2

* The serum protein values are in milligrams per hundred cubic centimeters, calculated in the regular chemical manner (not refractometrie). The figures here listed are for already concentrated serum, each cubic centimeter of concentrated serum representing from 4 to 5 cc. of original liquid serum.

We fully realize that spontaneous diuresis occurs frequently with nephrosis and that some of our apparently good results might have been due to a coincidental renal crisis. On the other hand, it can hardly have been fortuitous that in six of the first nine cases serum had been injected on the day before the diuresis began. Furthermore, the results in case 5 can hardly be explained on the basis of chance occurrence. The patient, who had been kept at a stationary weight for several weeks by thyroid extract, was allowed to become edematous by the withdrawal of the medication. While he was still increasing in weight at the rate of 1 pound (453 Gm.) daily, serum was administered. This medication was immediately followed by the occurrence of complete diuresis.

It is difficult to conclude that the effects noted were due to a strictly quantitative osmotic action of the serum. If such were the case, one would hardly expect the diuretic effect to go on for many days, until the edema was completely eliminated, without replenishment with more concentrated serum protein. It is suggested, therefore, that in addition to its osmotic action the serum when favorable results are seen supplies some substance or substances which set off the patient's own mechanism of diuresis.

The accompanying table, showing the blood protein values before and two days after injections, is given to demonstrate that the diuresis could not have been due to the mere replacement of serum proteins. It will be noted that the increase, particularly in the albumin fraction, was never of sufficient degree to be significant.

The fact that four of the patients made a complete recovery, including the secretion of normal urine, supports the idea that the treatment may have initiated some unknown physiologic response. Similar recoveries have been observed by many clinicians after spontaneous renal crises. In fact, the urine may become permanently normal within two days of the beginning of such a process.

The delayed and incomplete response shown in case 7 suggests that if more serum had been available the result might have been more striking.

In the two patients who showed no perceptible response, there were complicating factors worth noting. Patient 6 had severely damaged kidneys, as shown by the very poor results of function tests. In addition, the sugar and the mineral metabolism, factors of considerable importance in maintaining the water balance of the body, were severely disturbed. Patient 8 was dangerously ill with fatal pneumococcic peritonitis and septicemia.

The mere intravenous injection of a "water hungry" protein may explain in part the favorable responses, but it is probable that other factors are present which must be considered and investigated. More serum will be available in the future, with which a more exhaustive study from the clinical and the chemical standpoint will be made.

SUMMARY AND CONCLUSIONS

In six of nine patients with typical lipoid nephrosis who were treated during the edematous phases with concentrated (lyophile) human blood serum, complete and immediate diuresis took place. Delayed and incomplete diuresis occurred in one patient. In two patients no beneficial results were noted. Four patients not only lost their edema but had normal urine within a few weeks of treatment and have been clinically well to the time of writing.

These encouraging but conflicting results suggest the need for further investigation as to the physiologic mechanism involved and as to the optimum dose.

The patients with a favorable response lost weight in a way similar to that in which weight is lost in a spontaneous renal crisis; this suggests that the process is initiated in some way by the treatment.

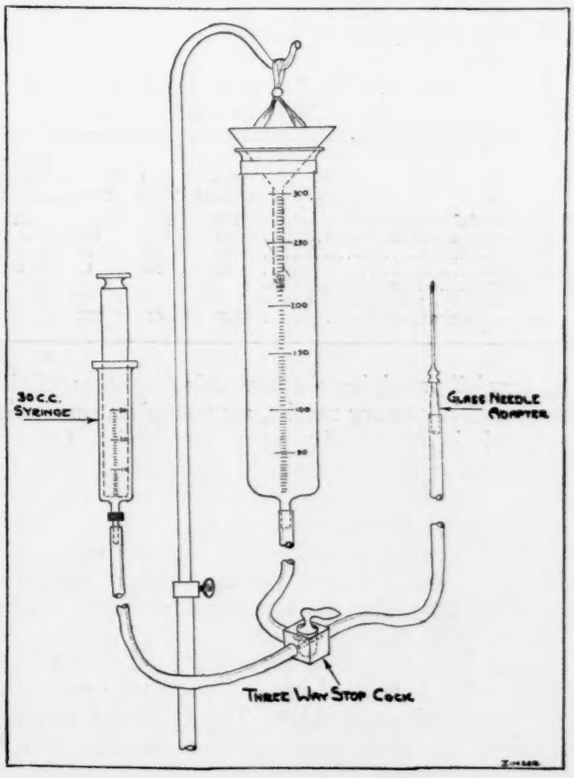

Fig. 5.—Scalp transfusion set.

FACTORS IN NEONATAL DEATHS

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Although there has been a definite reduction in mortality throughout the United States for infants under 1 year of age during the last twenty years, but little reduction has occurred in mortality for infants under 2 weeks of age. A further reduction in neonatal mortality will depend on a determination of the factors responsible for the deaths.

METHOD OF INVESTIGATION

Our investigation of the deaths of infants [1] showed that a large majority of death certificates in Chicago did not contain the true cause of death. The true cause in many cases was not known and could not be established without a satisfactory necropsy. During 1936 a campaign was undertaken to increase the number of satisfactory necropsies on infants.

TABLE 1.—*Five Major Causes of Death in Infants During 1936 and 1937*

	Premature	Full Term	Total	Per Cent Total Autopsies
I. Intracranial hemorrhage	130	107	237	22.7
II. Congenital malformations [3]	62	101	163	15.6
III. Pneumonia	46	38	84	8.1
IV. Asphyxia	42	23	65	6.2
V. Undetermined—that is, without demonstrable pathologic lesions other than atelectasis	320	42	362	

By carefully studying the anatomic diagnoses, clinical records and laboratory results, accurate data concerning causes of infant deaths were obtained. Cerebral hemorrhage, congenital malformations, pneumonia and asphyxia were found among the leading causes of death. Many neonatal deaths occurred in premature infants without demonstrable pathologic lesions other than atelectasis. These causes did not appear with corresponding frequency on the death certificates when necropsies were not performed.

During 1936 and 1937 there were 3,725 deaths in infants under 1 year of age. Satisfactory necropsies were performed on 1,642.[1a] The causes of death as determined by these satisfactory necropsies and by careful investigation of the clinical records and laboratory results are used mainly as the basis of this study. The five major causes of death during these two years are given in table 1.

An apparent increase in deaths from certain conditions is explained by the greater percentage of satisfactory necropsies obtained during 1937.

Nearly all the deaths to which complications of pregnancy or labor contribute occur within the first two weeks of life and usually within the first few days. If an infant dies after living one month or more, it is generally safe to assume that the death is not the result of antenatal or intranatal complications. Therefore, in studying the effect of antenatal and intranatal factors on neonatal mortality, we have used the group of full term infants who died between the ages of 1 and 11 months inclusive [2] as a basis of comparison with all infants (both premature and full term) who died during the first two weeks of life.[3] The 146 deaths of premature infants which occurred between the ages of 1 and 11 months inclusive, out of the 3,725 total deaths, were so few that they are not included in the analysis; their inclusion would have made but slight changes in the figures and greatly complicated the presentation.

The small group of infants who died in the age period from 2 weeks to 1 month, as well as the prematurely born infants who died after one month, is considered by us as on the borderline; that is, there is less certainty as to whether antenatal and intranatal complications were a factor in their deaths. Therefore, the group in the age period from 2 weeks to 1 month is not considered in the comparison.

In the analysis all the 2,283 infants (both premature and full term) who died in the first two weeks are compared with the 1,109 full term infants who died between the ages of 1 and 11 months inclusive. In the case of infants who died in the first two weeks, a detailed study is made of the factors possibly responsible for death. This is done first by determining the number of and comparing the incidence of factors associated with pregnancy and labor for (*a*) mothers whose infants died from particular causes, such as intracranial hemorrhage, as shown by satisfactory necropsies, and (*b*) mothers whose infants died from all causes.

It is done secondly by determining the number of and comparing the incidence of factors associated with pregnancy and labor for (*a*) mothers whose prematurely born infants died and (*b*) mothers whose full term infants died.[4]

These comparisons have been made to determine if possible (*a*) factors that are particularly important in contributing to all neonatal deaths (of both full term and premature infants); (*b*) factors that are particularly important in contributing to neonatal deaths of premature infants; (*c*) factors that are particularly important in contributing to neonatal deaths of full term infants, and (*d*) factors that are particularly important in contributing to neonatal deaths of both premature and full term infants from such specific causes as intracranial hemorrhage, pneumonia and asphyxia, and in cases in which there was no demonstrable pathologic lesion.

The ten antenatal or intranatal factors discussed are those which experience has indicated might have an important bearing on neonatal deaths. These factors are (1) the complications of pregnancy, of labor or of both; (2) operative procedures; (3) the use of solution of posterior pituitary; (4) the use of analgesics; (5) dry labor; (6) breech presentation; (7) multiple births; (8) antepartum care; (9) parity, and (10) syphilis. The incidence of these factors is shown in table 2.

1. Bundesen, H. N.; Fishbein, W. I.; Dahms, O. A., and Potter, Edith L.: Factors Responsible for Failure Further to Reduce Infant Mortality, J. A. M. A. **109**: 337-343 (July 31) 1937.

1a. Satisfactory necropsies were performed in 35 per cent of the infants who died during 1936, in 53 per cent during 1937, and in 83.5 per cent up to June 21, 1938.

2. In this group are included the infants who were 30 or more days and less than 1 year of age at the time of death.

3. This group was used because the necessary information was available for comparison and could not be secured in reference to living infants. The group was considered as survivors of the obstetric hazards and is sufficiently large to be representative of the living infants.

4. The differences in percentages were considered significant only in those instances in which they were at least three times the standard error. In many cases the differences were from four to twelve times the standard error.

In a discussion of the causes of deaths in the neonatal period, stillbirths should be included; an analysis of stillbirths will be presented in a subsequent paper.

1. TOTAL COMPLICATIONS OF PREGNANCY, OF LABOR OR OF BOTH

In the group comprising 1,048 infants, 468 mothers had complications of pregnancy, 467 had complications of labor and 113 had complications of pregnancy and labor combined.

Complications of pregnancy, of labor or of both occurred in the mothers of 45.8 per cent of the 2,283 [5] infants who died under the age of 2 weeks, 46.3 per cent of the 1,401 premature infants who died under 2 weeks, 45.2 per cent of the 882 full term infants who died under 2 weeks and 17.4 per cent of the 1,109 full term infants who died between the ages of 1 and 11 months inclusive during 1936 and 1937.

The frequency of maternal complications in the deaths from intracranial hemorrhage (56.6 per cent), pneumonia (58.4 per cent) and asphyxia (60 per cent) in the neonatal period is greater than the frequency of such complications in deaths from all causes in the neonatal period (45.8 per cent). This would indicate that complications of pregnancy and labor are particularly important in neonatal deaths from intracranial hemorrhage, pneumonia and asphyxia. Although complications seem to occur less frequently when the infant dies without any demonstrable pathologic lesion (42 per cent), the difference is within the range of chance.

(*a*) *Complications of Pregnancy.*[7]—Complications of pregnancy occurred in the mothers of 20.5 per cent of the 2,283 infants who died under the age of 2 weeks, 26.5 per cent of the 1,401 premature infants who died under 2 weeks, 10.9 per cent of the 882 full term infants

TABLE 2.—*Incidence of Various Antenatal and Intranatal Factors in General Groups of Infant Deaths with Special Reference to Leading Specific Causes of Neonatal Deaths, 1936 and 1937* *

Factors	Intracranial Hemorrhage		Pneumonia		Asphyxia		No Demonstrable Pathologic Lesion		Premature Deaths Under Two Weeks		Full Term Deaths Under Two Weeks		Total Deaths Under Two Weeks		Full Term Deaths Between 1 and 11 Months Inclusive	
	Number of Cases	Per Cent of Known Cases	Number of Cases	Per Cent of Known Cases	Number of Cases	Per Cent of Known Cases	Number of Cases	Per Cent of Known Cases	Number of Cases	Per Cent of Known Cases	Number of Cases	Per Cent of Known Cases	Number of Cases	Per Cent of Known Cases	Number of Cases	Per Cent of Known Cases
Total cases	237		84		65		362		1,401		882		2,283		1,109	
Total cases with complications of pregnancy, of labor or of both	134	56.6	49	58.4	39	60.0	152	42.0	649	46.3	399	45.2	1,048	45.8	193	17.4
Complications of pregnancy	44	18.6	26	31.0	8	12.3	88	24.3	372	26.5	96	10.9	468	20.5	90	8.1
Complications of labor	67	28.3	22	26.2	24	36.9	52	14.4	242	17.3	225	25.5	467	20.4	93	8.4
Complications of both pregnancy and labor	23	9.7	1	1.2	7	10.8	12	3.3	35	2.5	78	8.8	113	4.9	10	0.9
Operative intervention	88	37.1	22	26.2	27	41.5	56	15.5	263	18.8	304	34.5	567	24.8	110	10.0
Solution of posterior pituitary used	7	3.0	3	3.6	3	4.6	7	2.0	33	2.4	47	6.1	80	3.5	19	1.8
Analgesics used	28	12.1	8	9.5	12	18.4	42	11.6	154	11.1	109	12.5	263	11.6	33	3.0
Dry labor	13	10.0	2	4.4	3	5.8	13	5.5	45	6.3	27	6.2	72	6.3	2	0.4
Breech presentation	36	15.6	9	10.7	10	15.9	62	17.1	243	17.3	100	11.0	343	15.0	38	3.6
Plural births	17	7.0	3	4.0	6	9.0	63	18.0	186	13.4	19	2.2	205	9.1	29	2.7
Inadequate or no antepartum care	85	36.6	29	34.6	23	35.4	141	39.4	573	40.9	283	32.1	856	37.9	476	42.9
Primipara	69	53.0	15	33.0	24	46.0	95	40.0	302	42.0	205	47.0	507	44.0	164	32.0
Positive serologic test for syphilis	8	4.9	4	6.1	0	0.0	9	3.4	37	4.2	12	2.1	49	3.4	27	3.8

* Percentages given are those of the cases in which the data were available.

The difference between 45.8 per cent and 17.4 per cent is significant; it indicates that complications of pregnancy, of labor or of both are important factors in the deaths of infants under 2 weeks.

Such complications did not occur any more often in mothers of premature infants who died neonatally (46.3 per cent) than in mothers of full term infants who died neonatally (45.2 per cent).

During 1936 and 1937 there were 237 neonatal deaths from intracranial hemorrhage, eighty-four from pneumonia, sixty-five from asphyxia and 362 without any demonstrable pathologic lesion.

Complications of pregnancy, of labor or of both occurred in the mothers of (*a*) 56.6 per cent of the 237 infants who died under 2 weeks [6] from intracranial hemorrhage, (*b*) 58.4 per cent of the eighty-four infants who died under 2 weeks from pneumonia, (*c*) 60 per cent of the sixty-five infants who died under 2 weeks from asphyxia, and (*d*) 42 per cent of the 362 infants who died under 2 weeks without demonstrable pathologic lesions.

who died under 2 weeks and 8.1 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

The proportion of complications of pregnancy in the mothers of both premature and full term infants who died under 2 weeks is more than twice as great as in the mothers of the infants who died between 1 and 11 months inclusive. Thus, the proportion of the complications of pregnancy in the mothers of premature infants (26.5 per cent) who died under 2 weeks is more than twice as great as in the mothers of full term infants (10.9 per cent) who died in the same period. These figures indicate that the complications of pregnancy are important in deaths during the first two weeks, particularly in deaths of premature infants.

Complications of pregnancy occurred in the mothers of (*a*) 18.6 per cent of the 237 infants who died from intracranial hemorrhage, (*b*) 31 per cent of the eighty-four infants who died from pneumonia, (*c*) 12.3 per cent of the sixty-five infants who died from asphyxia and (*d*) 24.3 per cent of the 362 infants who died in which demonstrable pathologic lesions were absent.

The frequency of complications of pregnancy is about as great for all deaths during the neonatal period (20.5

5. This group is made up of 1,401 premature infants and of 882 full term infants.

6. In the following pages the discussion of deaths from intracranial hemorrhage, pneumonia and asphyxia and those in which there was no demonstrable pathologic lesion when combined refer to deaths under 2 weeks for which the cause was determined by satisfactory necropsy.

7. By this we refer only to complications occurring before the onset of labor.

per cent) as for deaths from intracranial hemorrhage (18.6 per cent). Such complications seem to be more important in the deaths from neonatal pneumonia (31 per cent), and less important in asphyxia (12.3 per cent). They are possibly more important in the infants who died without demonstrable pathologic lesions (24.3 per cent) than in the total deaths under 2 weeks.

(*b*) *Complications of Labor.*[8]—Complications of labor occurred in the mothers of 20.4 per cent of the 2,283 infants who died under 2 weeks, 17.3 per cent of the 1,401 premature infants who died under 2 weeks, 25.5 per cent of the 882 full term infants who died under 2 weeks and 8.4 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

These differences in the percentages indicate that complications of labor are important factors in neonatal mortality in general and are more important in the deaths of full term infants than in those of premature infants.

Complications of labor occurred in the mothers of (*a*) 28.3 per cent of the 237 infants who died from intracranial hemorrhage, (*b*) 26.2 per cent of the eighty-four infants who died from pneumonia, (*c*) 36.9 per cent of the sixty-five infants who died from asphyxia and (*d*) 14.4 per cent of the 362 infants who died without demonstrable pathologic lesions.

In the deaths from intracranial hemorrhage and asphyxia, the frequency of the complications of labor is greater than the frequency of such complications in the total group of 2,283 deaths under 2 weeks. Even in the infants who died of pneumonia, complications of labor occurred with greater frequency than in the infants who died between 1 and 11 months inclusive.

(*c*) *Complications of Both Pregnancy and Labor.*[9]—Complications of both pregnancy and labor occurred in the mothers of 4.9 per cent of the 2,283 infants who died under 2 weeks, 2.5 per cent of the 1,401 premature infants who died under 2 weeks, 8.8 per cent of the 882 full term infants who died under 2 weeks and 0.9 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

Obviously, complications of pregnancy and labor when they occur together are important in the production of neonatal deaths. Furthermore, complications of pregnancy and labor together seem to be more important in the deaths of full term infants than in the deaths of premature infants.

Complications of pregnancy and labor occurred together in the mothers of (*a*) 9.7 per cent of the 237 infants who died from intracranial hemorrhage, (*b*) 1.2 per cent of the eighty-four infants who died from pneumonia, (*c*) 10.8 per cent of the sixty-five infants who died from asphyxia and (*d*) 3.3 per cent of the 362 infants who died without demonstrable pathologic lesion.

Thus complications of pregnancy and labor when they occur together are particularly important in the production of deaths from intracranial hemorrhage and asphyxia and are relatively less important in the production of deaths without any demonstrable pathologic lesion and in pneumonia.

Conclusion.—The complications of pregnancy and those of labor occurring alone or together seem to be responsible, in part at least, for deaths in infants under 2 weeks of age. The complications of pregnancy are particularly important in the production of deaths in premature infants, while the complications of labor, or combined complications of pregnancy and labor, are more liable to contribute to deaths in full term infants.

The complications of pregnancy also seem to play a part in the deaths of infants who, at necropsy, are without demonstrable pathologic lesions. Most of these infants are premature. Complications of pregnancy also are a factor in pneumonia, while the complications of labor seem to be important in the deaths from pneumonia, asphyxia and intracranial hemorrhage.

A further reduction of deaths in premature infants and deaths from pneumonia in infants under 2 weeks may be secured by providing adequate antepartum care to avoid the complications of pregnancy or, at least, by treating such complications properly and promptly. By providing skilled care during delivery, the ill effects of the complications of labor may be diminished or abolished; thus perhaps a further reduction in deaths from asphyxia and intracranial hemorrhage may be secured.

"The desirable attendant for the pregnant woman is a physician adequately trained and experienced in obstetrics and so aware of his limitations that, when emergencies arise which are beyond his competence, he will not delay in securing help." [10]

2. OPERATIVE PROCEDURES

Under the heading "operative procedures" are included any technics or operations exclusive of episiotomy other than those used in the conduct of normal, spontaneous labor and delivery; for example, such procedures as mechanical induction of labor, forceps delivery, version and extraction and cesarean section.

Operative procedures were employed for the mothers of 24.8 per cent of the 2,283 infants who died under 2 weeks, 18.8 per cent of the 1,401 premature infants who died under 2 weeks, 34.5 per cent of the 882 full term infants who died under 2 weeks, and 10 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

Thus operative procedures were employed with greater frequency for the mothers of infants who died under 2 weeks than for those who died between 1 and 11 months inclusive and may be an important factor associated with neonatal deaths. Such procedures are more frequent in the neonatal deaths of full term infants than of premature infants.

Operative procedures were employed for the mothers of (*a*) 37.1 per cent of the 237 infants who died from intracranial hemorrhage, (*b*) 26.2 per cent of the eighty-four infants who died from pneumonia, (*c*) 41.5 per cent of the sixty-five infants who died from asphyxia and (*d*) 15.5 per cent of the 362 infants who died without demonstrable pathologic lesions.

Comparison of these four percentages with the 24.8 per cent of operative procedures in the total 2,283 neonatal deaths seems to indicate that operative procedures are especially frequent in association with deaths from intracranial hemorrhage and asphyxia but are not as frequent with deaths from the pneumonias or without demonstrable pathologic lesions.

8. By this we refer only to complications occurring from the onset of labor to the birth of the infant.

9. By complication of both pregnancy and labor is meant any abnormal condition occurring during pregnancy, in addition to some abnormal condition during labor.

10. Galdston, Iago: Maternal Deaths: The Ways to Prevention, New York, Commonwealth Fund, 1937, p. 32.

(*a*) *Operative Procedures Together with Complications of Pregnancy, of Labor or of Both.*—How often do complications of pregnancy, of labor or of both and operative procedures occur together when the infant dies under 2 weeks? Which is the more important factor in these neonatal deaths—the operative procedures or the complications?

When complications of pregnancy, of labor or of both occurred, operative procedures were employed in the delivery of 54.2 per cent of the 1,048 infants who died under 2 weeks, 40.5 per cent of the 649 premature infants who died under 2 weeks, 76.5 per cent of the 399 full term infants who died under 2 weeks and 57 per cent of the 193 full term infants who died between 1 and 11 months inclusive.

These figures indicate that, with complications of pregnancy, of labor or of both, operative procedures were employed with almost equal frequency when the infant died between 1 and 11 months inclusive as when the infants died under 2 weeks. If, however, the infants who died under 2 weeks are grouped as premature and as full term infants, mothers had complications with about the same frequency in the two groups. Operative procedures were employed much less frequently in the delivery of premature than in the delivery of full term infants. When the deaths of full term infants only who died under 2 weeks are compared with the deaths of full term infants who died between 1 and 11 months inclusive, it is found that operative procedures were employed more frequently in the delivery of infants who died under 2 weeks, the figures being 76.5 per cent and 57 per cent, respectively.

(*b*) *Operative Procedures Together with Complications of Pregnancy.*—Operative intervention, together with complications of pregnancy, occurred in the delivery of 23.3 per cent of the 468 infants who died under 2 weeks, 23.7 per cent of the 372 premature infants who died under 2 weeks, 21.9 per cent of the ninety-six full term infants who died under 2 weeks and 8.8 per cent of the ninety full term infants who died between 1 and 11 months inclusive.

This difference between 23.3 per cent and 8.8 per cent indicates that operative procedures together with complications of pregnancy are important in neonatal deaths.

(*c*) *Operative Procedures Together with Complications of Labor.*—When complications of labor only occurred, operative procedures were employed in the delivery of 76.5 per cent of the 467 infants who died under 2 weeks, 62.8 per cent of the 242 premature infants who died under 2 weeks, 91.2 per cent of the 225 full term infants who died under 2 weeks and 99 per cent of the ninety-three full term infants who died between 1 and 11 months inclusive.

Operative procedures are less often associated with deaths of premature infants under 2 weeks when there were complications of labor than they are with deaths of full term infants under 2 weeks. Furthermore, operative procedures with complications of labor seem to increase the infants' chances of surviving the neonatal period, since there was a greater proportion of operative procedures in the case of infants who died between 1 and 11 months inclusive at whose birth there were complications of labor than there was in the case of the infants who died under 2 weeks at whose birth there were complications of labor.

Conclusion.—Operative procedures in general are frequently associated with neonatal deaths and particularly with those from intracranial hemorrhage and asphyxia. In those cases in which there are complications of pregnancy, death of an infant under 2 weeks is more apt to occur if operative procedures are employed than if not employed. However, this statement must be considered with due reference to the indications for the operative procedures in the case of certain complications

Operative procedures appear to be beneficial when employed for complications of labor; there are more neonatal deaths after complications of labor without operation than after such complications with operation. Conversely, operative procedures involve a greater risk of death in the neonatal period in cases in which complications of pregnancy occur than in instances in which delivery is permitted to occur spontaneously.

Since operative procedures for the mothers with complications of pregnancy seem to increase the hazard to the infant, careful consideration should be given before any such procedures are employed, and the indications should be duly weighed by the obstetrician. With many complications of pregnancy the operative procedures are justified despite the increased hazard to the infant, since the procedure is performed primarily in the interests of the mother.

Operative procedures for complications of labor, particularly when the infant is born at full term, seem to be a factor in reducing the hazard to the infant during the neonatal period. Since operative procedures in general, however, seem to add to the danger to the infant, only the most skilled type of obstetric technic must be employed for delivery of the infant if the child is to be given the maximum opportunity for survival.

3. SOLUTION OF POSTERIOR PITUITARY

It is generally conceded that the use of solution of posterior pituitary during the first and second stages of labor is, as a rule, hazardous for the infant.

> The use of oxytocics, particularly pituitary extract, prior to delivery, is dangerous. The danger is twofold: first, to the mother, as its use has repeatedly been followed by rupture of the uterus; second, to the fetus, as many cases of stillbirth have been caused by this drug due to severe toxic uterine contractions producing violent labor which results in intracranial damage.
>
> Pituitary extract should be considered like dynamite, useful when skilfully and intelligently used at the proper time, but otherwise very dangerous.
>
> The child may be lost as a result of cerebral hemorrhage caused by the rapid forcing of the head into and through the birth canal, or by asphyxia due to compression of the placenta by long-continued uterine contractions.[11]

In the cases in which the data were available, solution of posterior pituitary was given during the first or second stage of labor to the mothers of 3.5 per cent of the 2,262 infants who died under 2 weeks, 2.4 per cent of the 1,391 premature infants who died under 2 weeks, 5.3 per cent of the 871 full term infants who died under 2 weeks and 1.8 per cent of the 1,062 infants who died between 1 and 11 months inclusive.

These figures seem to show that solution of posterior pituitary was given twice as frequently to mothers of

11. Maternal Care: The Principles of Antepartum, Intrapartum, and Postpartum Care for the Practitioner of Obstetrics, American Committee on Maternal Welfare, Chicago, University of Chicago Press, 1937, pp. 51-52.

infants who died under 2 weeks as to mothers of full term infants who died between 1 and 11 months inclusive.

Conclusion.—The use of solution of posterior pituitary during the first and second stages of labor is contributory, at least, to neonatal deaths. It seems particularly a hazard in contributing to deaths of full term infants under 2 weeks of age.

Solution of posterior pituitary when given to mothers during the first or second stage of labor should be administered with the greatest caution and only when the indications have been determined to be proper by the obstetrician.

4. ANALGESICS

The use of analgesics has also been suggested as a possible factor in the production of deaths in infants under 2 weeks.

In the cases in which the data were available, analgesics were given to the mothers of 11.6 per cent of the 2,260 infants who died under 2 weeks, 11.1 per cent of the 1,389 premature infants who died under 2 weeks, 12.5 per cent of the 871 full term infants who died under 2 weeks and 3.1 per cent of the 1,061 infants who died between 1 and 11 months inclusive.

Analgesics were given almost four times as frequently to the mothers of infants who died under 2 weeks as to the mothers of those who died between 1 and 11 months inclusive.

Analgesics were given to the mothers of (*a*) 12 per cent of the 234 infants who died from intracranial hemorrhage, (*b*) 9.5 per cent of the eighty-four infants who died from pneumonia, (*c*) 18.5 per cent of the sixty-five infants who died from asphyxia and (*d*) 11.7 per cent of the 359 infants who died without demonstrable pathologic lesions.

The administration of analgesics to the mother seems to be more frequent in association with deaths from asphyxia than in association with deaths from all causes in infants under 2 weeks. However, the difference is less than twice the standard error.

Conclusion.—The use of analgesics is an important factor associated with neonatal deaths and may be important in the deaths due to asphyxia. Physicians should bear in mind the threat to the life of the infant produced by the injudicious use of analgesics and not permit the mother's demands for "painless childbirth" to overweigh their good judgment to the degree that they employ drugs to alleviate pain at risk to the infant's life.

5. DRY LABOR

Information concerning dry labor was available for only a part of those deaths occurring during 1937. It was not coded during 1936.

Dry labor occurred in the mothers of 6.3 per cent of the 1,138 infants who died under 2 weeks, 6.3 per cent of the 702 premature infants who died under 2 weeks and 0.4 per cent of the 516 infants who died between 1 and 11 months inclusive.

The frequency of dry labor is greater in association with the deaths of infants under 2 weeks than in association with those of infants between 1 and 11 months inclusive.

Dry labor was present in the mothers of (*a*) 10 per cent of the 130 infants who died from intracranial hemorrhage, (*b*) 4.4 per cent of the forty-six infants who died from pneumonia, (*c*) 5.8 per cent of the fifty-two infants who died from asphyxia and (*d*) 5.5 per cent of the 236 infants who died without demonstrable pathologic lesions.

The frequency of dry labor seems to be greater in association with deaths from intracranial hemorrhage than in association with all neonatal deaths. However, the difference is not quite three times the standard error.

Conclusion.—Dry labor may be a factor in the production of neonatal deaths and particularly of those from intracranial hemorrhage. Artificial rupture of the membranes should be done only when indicated and dry labors conducted as skilfully as possible.

6. BREECH PRESENTATION

Breech presentation occurred in the case of 15 per cent of the 2,283 infants who died under 2 weeks, 17.3 per cent of the 1,401 premature infants who died under 2 weeks, 11.3 per cent of the 882 full term infants who died under 2 weeks and 3.4 per cent of the 1,109 full term infants who died between 1 and 11 months inclusive.

Breech presentation occurred with much greater frequency in association with the deaths of infants under 2 weeks than in association with those of infants between 1 and 11 months inclusive.

Breech presentation occurred in the case of (*a*) 15.4 per cent of the 237 infants who died from intracranial hemorrhage, (*b*) 10.7 per cent of the eighty-four infants who died from pneumonia, (*c*) 15.4 per cent of the sixty-five infants who died from asphyxia and (*d*) 17.1 per cent of the 362 infants who died without demonstrable pathologic lesions.

Breech presentation seems to occur with about the same frequency in association with deaths of infants without demonstrable pathologic lesions, with deaths from asphyxia and intracranial hemorrhage and with deaths from all causes in infants under 2 weeks.

Conclusion.—Breech presentation is a significant factor in the neonatal deaths, especially in neonatal deaths of prematurely born infants.

Breech presentation occurs with greater frequency in the case of premature infants than in the case of full term infants, and the general neonatal mortality is much higher for premature infants than for full term infants. But even in the case of deaths of full term infants under 2 weeks, breech presentation occurred with three times the frequency of its occurrence with the deaths in infants between 1 and 11 months inclusive. Since breech presentation is a factor in these deaths, the need is apparent for especially skilled obstetric care in breech deliveries in order to reduce mortality.

7. MULTIPLE BIRTHS

The births were multiple for 9 per cent of the 2,283 infants who died under 2 weeks, 13.5 per cent of the 1,401 premature infants who died under 2 weeks, 2.2 per cent of the 882 full term infants who died under 2 weeks and 2.6 per cent of the 1,109 infants who died between 1 and 11 months inclusive.

The frequency of multiple births is greater for infants who died under 2 weeks than for those who died between 1 and 11 months inclusive. This difference is produced particularly by the premature infants.

The births were multiple for (*a*) 7.2 per cent of the 237 infants who died from intracranial hemorrhage, (*b*) 3.6 per cent of the eighty-four infants who died

from pneumonia, (*c*) 9.2 per cent of the sixty-five infants who died from asphyxia and (*d*) 17.4 per cent of the 362 infants who died without demonstrable pathologic lesions.

The percentage of infants who died under 2 weeks without demonstrable pathologic lesions (which group is made up mostly of premature infants) is twice as high as the percentage of deaths of twins and triplets in the group of 2,283 infants who died under 2 weeks.

Conclusion.—Twins or triplets contribute greatly to neonatal mortality because of the large number of multiple pregnancies that terminate prematurely and apparently not because of any other particular condition associated with twins and triplets. That this is probably true is shown by the fact that the number of full term twins who died under 2 weeks is slightly less than the number of full term twins who died between 1 and 11 months inclusive. In other words, a greater percentage of full term twins survive the neonatal period than die, while the reverse is true in the case of premature infants.

Twins or triplets who die during the neonatal period frequently are without demonstrable pathologic lesions. Every possible effort should be made to diagnose multiple pregnancy as early as possible and to use all available methods to prevent its early termination.

It is generally believed that the second-born twin dies much more often than the first. Our figures show that in 1937 forty-six first-born and sixty-two second-born twins died neonatally.

8. ANTEPARTUM CARE

Most obstetricians believe that adequate antepartum care is a factor in the prevention of both maternal and neonatal mortality. A medical investigator specially trained in this type of work made a personal inquiry to determine in how many cases in which the infant died the mother had adequate antepartum care and then judged whether the care was adequate or inadequate.[12]

Errors may occur in this type of survey because there is no way to check the accuracy of the statements made to the investigator. However, the data seem sufficiently reliable to warrant certain conclusions.

In the cases in which the data were available, there was inadequate or no antepartum care for the mothers of 37.9 per cent of the 2,260 infants who died under 2 weeks, 41.3 per cent of the 1,389 premature infants who died under 2 weeks, 32.5 per cent of the 871 full term infants who died under 2 weeks and 44.9 per cent of the 1,109 infants who died between 1 and 11 months inclusive.

A smaller percentage of mothers of infants who died between 1 and 11 months inclusive received adequate antepartum care than of mothers of those who died under 2 weeks. The percentage of mothers of premature infants who died under 2 weeks who received adequate antepartum care was less than the percentage of mothers of full term infants who died under 2 weeks who received such care.

These figures may seem contradictory. They indicate that one effect of antepartum care is to increase the likelihood of carrying gestation to term and, in this way, to improve the infant's chance of survival beyond the neonatal period.

They indicate also, however, that the less antepartum care the mother had the greater were the chances of the infant's surviving the neonatal period. This cannot be true if antepartum care is of any value. Therefore, there must be factors producing neonatal mortality which are not eliminated by antepartum care. In other words, factors enter into these cases which counteract or overcome the benefits derived from proper supervision and management of pregnancy.

To prove that such factors exist, it is necessary to remember that they would appear in the tabulation of deaths with the same frequency as antepartum care; that is, they would occur less frequently for the premature than for the full term infants who died under 2 weeks and still less frequently for the full term infants who died between 1 and 11 months inclusive.

Of the factors examined in this investigation, the use of solution of posterior pituitary before the end of the second stage of labor, complications of labor and operative procedures are shown to occur with the same frequency as adequate antepartum care; that is, they seem less frequent for the premature than for the full term infants who died under 2 weeks and still less frequent for the full term infants who died between 1 and 11 months inclusive. The expected benefits of adequate antepartum care may be offset for the full term infants dying neonatally by injudicious or unindicated procedures during labor or delivery, by complications of labor, by the use of solution of posterior pituitary before the termination of the second stage or by improper operative procedures.

Conclusion.—Antepartum care is valuable because it probably aids in the prevention of prematurity. However, the value of antepartum care may be entirely lost as the result of injudicious procedures or faulty technic at the time of labor. Hence the infant is given the best chance for surviving if the mother receives adequate antepartum care with skilled care during delivery and all injudicious procedures are strictly avoided.

9. PARITY

Of 726 premature infants who died under 2 weeks during 1937, the parity of the mother was known for 714. Of the 440 full term infants who died under 2 weeks during 1937, the parity of the mother was known for 436, a total of 1,150 infants who died under 2 weeks. Of the 545 full term infants who died between 1 and 11 months inclusive during 1937, the parity of the mother was known for 520.

In the cases in which the parity of the mother was known, a primipara was the mother of 44 per cent of the 1,150 infants who died under 2 weeks, of 42 per cent of the 714 premature infants who died under 2 weeks, of 47 per cent of the 436 full term infants who died under 2 weeks and of 32 per cent of the 520 full term infants who died between 1 and 11 months inclusive.

Primiparity occurred with greater frequency in mothers of infants who died under 2 weeks than in mothers of those who died between 1 and 11 months inclusive.

In cases in which the parity was known, a primipara was the mother of (*a*) 53 per cent of the 135 infants who died from intracranial hemorrhage, (*b*) 33 per

12. Our criteria for adequate antepartum care in general followed the standards of the Children's Bureau and included supervision over the condition of the mother beginning not later than the fifth month of gestation, periodic blood pressure readings, regular chemical and microscopic examinations of the urine, Wassermann or Kahn tests, the taking of internal pelvic measurements, determination of the position of the fetus and the existence of heart tones, a complete physical examination, attention to diet and elimination, and advice as to exercise, work, recreation and rest.

cent of the forty-six infants who died from pneumonia, (*c*) 46 per cent of the fifty-two infants who died from asphyxia and (*d*) 40 per cent of the 239 infants who died without demonstrable pathologic lesions.

A greater percentage of mothers of infants who died of intracranial hemorrhage were primiparas than of mothers of all infants who died under 2 weeks.

The frequency of primiparity was about the same for mothers of infants who died from asphyxia and for those who died without demonstrable pathologic lesions as for mothers of all infants who died under 2 weeks.

(*a*) *Parity and Complications of Pregnancy, of Labor or of Both.*—Complications of pregnancy, of labor or of both occurred in the mothers of 57.5 per cent of the 205 full term infants who died under 2 weeks who were primiparas, in the mothers of 42.5 per cent of the 231 full term infants who died under 2 weeks who were multiparas, in the mothers of 31 per cent of the 164 full term infants who died between 1 and 11 months inclusive who were primiparas, and in the mothers of 17.7 per cent of 356 full term infants who died between 1 and 11 months inclusive who were multiparas.

These are significant differences and indicate that primiparas definitely have more complications than do multiparas.

(*b*) *Parity and Complications of Labor.*—Complications of labor occurred in the mothers of 41 per cent of the 205 full term infants who died in the first two weeks who were primiparas, in the mothers of 22.7 per cent of the 231 full term infants who died under 2 weeks who were multiparas, in the mothers of 15.8 per cent of the 164 full term infants who died between 1 and 11 months inclusive who were primiparas and in the mothers of 5.9 per cent of the 356 full term infants who died between 1 and 11 months inclusive who were multiparas.

There is a greater proportion of complications of labor in primiparas than in multiparas.

Of the 220 infants who died under 2 weeks whose mothers did not have complications, (*a*) for 39.6 per cent the mother was a primipara and (*b*) for 60.4 per cent the mother was a multipara.

Of the 406 infants who died between 1 and 11 months inclusive whose mothers did not have complications, (*a*) for 27.8 per cent the mother was a primipara and (*b*) for 72.2 per cent the mother was a multipara.

The difference between 39.6 per cent and 27.8 per cent is worthy of note and probably not accidental. In the case of primiparas even without complications there is a definitely greater hazard to the life of the infant during the neonatal period.

(*c*) *Parity and Operative Procedures.*—Of the mothers whose infants died in the first two weeks, operative procedures were employed for (*a*) 49.5 per cent of the 205 primiparas and (*b*) 26 per cent of the 231 multiparas.

This again is a noteworthy difference, indicating that operative procedures are a definite factor in the production of deaths in infants under 2 weeks whose mothers are primiparas.

Conclusion.—In the case of primiparas without complications, there is during the first two weeks a definitely greater hazard to the life of the infant than in the case of multiparas without complications; primiparas have more complications, particularly complications of labor, than do multiparas; operative procedures are employed more often for primiparas than for multiparas. This points out again the need for most skilled obstetric care, particularly in the delivery of primiparas in the presence of complications, in order further to reduce neonatal mortality.

10. SEROLOGIC TESTS FOR SYPHILIS

In the case of the 1,401 premature and 882 full term infants who died neonatally, the serologic test for syphilis was done for 885 and 572 of the mothers, respectively. The serologic test was positive for the mothers of 3.4 per cent of the 1,437 infants who died under 2 weeks, 4.2 per cent of the 885 premature infants who died under 2 weeks, 2.1 per cent of the 572 full term infants who died under 2 weeks and 3.8 per cent of the 705 infants who died between 1 and 11 months inclusive.

The difference in the percentage of positive serologic tests between the mothers of the premature and those of full term infants dying neonatally is only 2.8 times the standard error. There is little difference in the frequency of positive serologic tests between mothers of infants who died under 2 weeks and those of infants who died between 1 and 11 months inclusive. We may assume, therefore, that a positive serologic test is more often associated with the neonatal death of premature infants than of full term infants.

Conclusion.—Even though our figures do not show syphilis to be a great factor in neonatal deaths, every pregnant woman should have a serologic examination for syphilis as early as possible in pregnancy and adequate treatment should be given in all cases of a positive reaction. Some reduction in neonatal mortality, particularly for premature infants, should result.

COMMENT

In listing causes of death in the neonatal period as determined by satisfactory necropsy, the largest group is that in which there was no demonstrable pathologic lesion; then follow those in which there was intracranial hemorrhage, pneumonia and asphyxia, respectively.

A reduction of neonatal mortality to any material degree demands attack on those conditions which our figures seem to show are most important in contributing directly or indirectly to the causes of death.

I. *No Demonstrable Pathologic Lesion.*—The following factors are of special importance in contributing to the deaths of infants under 2 weeks in whom demonstrable pathologic lesions are not found: (*a*) prematurity, (*b*) complications of pregnancy, (*c*) breech presentation and (*d*) multiple births.

If the deaths of infants without demonstrable pathologic lesions are to be prevented, an effort must be directed particularly toward the prevention of prematurity, toward providing the best possible care for complications of pregnancy and toward providing the most skilled care during delivery in abnormal presentations.

The true cause of death in the group of infants without any demonstrable pathologic lesion is not yet determined in many cases. Since the majority of these infants are viable, the prematurity itself is probably not entirely responsible.

(*a*) Prematurity: Further studies are necessary to determine exactly what factors produce death in viable premature infants. Possibly some pathologic lesion not yet demonstrated by methods now known may be a factor that contributes to the deaths in this group.

In our series of cases these premature infants were promptly put into an incubator, were supplied with

oxygen and were constantly given the type of special care that is accepted as necessary and satisfactory for prematurely born infants whether they are at home or in the hospital. Consequently we do not believe that lack of the best known care is responsible for the deaths in our series of premature infants without demonstrable pathologic lesions.

Among the complications most often leading to premature births are (1) toxemia, (2) external violence, such as accidents to the mother, (3) placenta praevia and (4) undetermined causes. These factors lead to birth before term, either by producing spontaneous expulsion of the fetus or because the emergency nature of the condition is often an indication for intervention.

In the prevention of prematurity from toxemia and external violence, as well as from other causes, provision of the best possible antepartum care may be of some aid. Some experimental work indicates that the use of vitamin E and progestin beginning in the early months of pregnancy may aid in the prevention of prematurity in that large group of cases in which the cause of prematurity is undetermined and even perhaps in some instances of premature separation of the placenta. Further studies are needed to determine the exact value of these preparations.

Other things being equal, the infant's chances of survival increase with the period of gestation up to term. To the extent to which prematurity may be prevented or diminished, neonatal mortality will be reduced.

(*b*) Complications of Pregnancy: To cope with the complications of pregnancy, also, adequate antepartum care seems to be the most hopeful effort.

(*c*) Breech Presentation: In breech deliveries, a common cause of death is anoxemia (lack of oxygen in the blood), which in many instances occurs without producing any definite pathologic lesions. It is well known that breech deliveries occur more often with premature births than with full term births, which may account in part for the mortality due to breech deliveries of infants without any demonstrable pathologic lesion. The provision of the best possible obstetric care during delivery in cases of breech presentation may result in reduced mortality from this cause.

(*d*) Multiple Births: Perhaps the use of progestin, wheat germ oil or normal pregnancy serum in cases of multiple pregnancy may serve to prolong the pregnancy and thus improve the chances of survival of the infants. Our figures do not show that there is anything inherent in multiple pregnancies that may lead to death of the infants other than the fact that these pregnancies often terminate prematurely.

II. *Intracranial Hemorrhage.*—Our figures appear to show that the following factors are of special importance in contributing to the deaths of infants under 2 weeks from intracranial hemorrhage; (*a*) operative procedures, (*b*) breech presentation, (*c*) complications of labor, accompanied by operative procedures, and (*d*) primiparity.

If the deaths of infants from intracranial hemorrhage are to be prevented, effort must be directed particularly toward providing the most skilled type of obstetric care during labor and delivery, since the factors which are most important in contributing to these deaths, that is, operative procedures, breech presentation, complications of labor and primiparity, are directly connected with the delivery of the infant. Our analysis has revealed that even with the best type of antepartum care the complications of labor with unskilled operative procedures or the use of unindicated operative procedures may diminish or nullify the value of efforts exerted in behalf of the mother and infant throughout pregnancy.

In specific instances, preventable factors, such as the questionable use of high forceps, depressed fracture following forceps and the injudicious use of solution of posterior pituitary, were found to be associated with deaths from intracranial hemorrhage.

While skill in the conduct of labor will not prevent all deaths from intracranial hemorrhage, it should aid materially in reducing the number.

III. *Pneumonia.*—Our studies seem to indicate that the following factors are of special importance in contributing to the deaths of infants under 2 weeks from pneumonia: (*a*) complications of labor and pregnancy and (*b*) prematurity. Hence better obstetric care, both antepartum and intrapartum, should aid in the reduction of the number of deaths from this cause, since it will help prevent complications of pregnancy and labor, and prematurity.

There are probably other factors responsible for deaths from pneumonia in infants under 2 weeks with which our present study was not concerned. We refer specifically to the care given infants immediately after birth in nurseries for the newborn. The establishment of aseptic nursery technic, the prevention of contact between newborn infants and individuals not concerned with their care, may aid in reducing the number of deaths from pneumonia in infants under 2 weeks. Experimental work now being conducted on air conditioning of nurseries and the use of ultraviolet irradiation to aid in the prevention of air-borne infections may bring to light other means of reducing deaths from pneumonia.

IV. *Asphyxia.*—The figures appear to show that the following factors are of special importance in contributing to deaths of infants under 2 weeks from asphyxia: (*a*) breech presentation, (*b*) the use of analgesics and (*c*) operative procedures because of fetal or maternal disproportion.

If the deaths of infants from asphyxia are to be prevented, effort must be directed particularly toward improvement in care given at the time of delivery. Death from asphyxia seems to occur, in the complicated cases, especially with breech deliveries; such cases deserve the most skilled obstetric care.

Avoidance of unnecessary use of analgesics should also be beneficial.

It is interesting to note that 20 per cent of the deaths from asphyxia were in infants delivered by cesarean section. More skilful technic in cesarean operations and the avoidance of them when they are not indicated would reduce the mortality from this cause.

SUMMARY

A large number of factors contributing to deaths of infants under 2 weeks, and particularly those under 1 day of age, may be controlled by the knowledge now available. Improvement in obstetric care, both antepartum and postpartum, better hospital nursery care, the avoidance of dangerous procedures and injudicious use of drugs, which figures show to be definitely hazardous, the use of measures to prolong pregnancy to term, such as progestin and vitamin E, and the employment of proper methods of resuscitation, should bring a definite reduction in neonatal mortality.

THE SIGNIFICANCE OF THE POSITIVE KLINE EXCLUSION TEST

UNCONFIRMED BY THE KOLMER OR KAHN TEST

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In 1926 Kline and Young [1] published their first report of a microscopic slide precipitation test for the detection of syphilis. In subsequent reports,[2] modifications were given which were directed mostly toward the preparation of a more sensitive antigen and more stable antigen emulsion. At present the Kline test is used in two forms: one, with "very sensitive" antigen emulsion, designated as the Kline exclusion test; the other, with a "sensitive" antigen emulsion, designated as the Kline diagnostic test. These tests are easily and rapidly performed, are comparatively inexpensive and require but little equipment.

The Bureau of Bacteriology of the Maryland State Department of Health became interested in the Kline exclusion test while seeking a simple yet reliable screen test, by which to exclude as negative many of the routine specimens submitted for the serodiagnosis of syphilis. Reports in the literature indicated that the Kline exclusion test was highly sensitive but also somewhat nonspecific.[3] Most of these reports were based on large series of tests on routine specimens. In the majority, analyses were made on the basis of agreement or disagreement with other tests such as the Kahn or the Kolmer-Wassermann. In some, accurate clinical information was available. In one, evaluation was attempted by sending questionnaires to the individual physicians.

In the Maryland laboratories a series of tests was carried out in triplicate on approximately 500 specimens in a preliminary attempt at evaluation of the Kline exclusion test. In this series the primary concern was the determination of the incidence of Kahn or Kolmer reactions, in the absence of Kline exclusion reactions. This incidence was found to be very slight. Of 272 specimens with negative Kline exclusion reactions, one was unsatisfactory for examination by either the Kolmer or the Kahn test and two gave doubtful Kolmer reactions. One of these doubtful Kolmer specimens came from a treated patient, the other had been submitted for diagnosis. Neither case was checked by a second specimen. None of the remaining 269 Kline exclusion negative specimens reacted in any degree to the Kolmer or to the Kahn test. Since no positive Kolmer or Kahn reaction was obtained when the Kline exclusion test was negative, it seemed that the Kline exclusion was a satisfactory screen test and the routine use of it for this purpose was adopted. It may be added that every one of 200 more specimens tested at various intervals has also been found to give negative Kline exclusion, Kolmer and Kahn reactions. In another series in which the Hinton and Kline exclusion tests were performed in parallel, none of 401 specimens which were Kline exclusion negative were Hinton positive or doubtful.

From the beginning of our experience with the Kline exclusion test it was noticed that a number of positive Kline exclusion reactions were accompanied by negative Kolmer and Kahn reactions. Since reports in the literature have indicated that many specimens which are positive to the Kline exclusion test and negative to other tests are indicative of syphilis, and since the recent evaluation studies of the United States Public Health Service [4] have indicated a high degree of specificity for this test, such reactions were first reported to physicians as doubtful. It was hoped, thereby, that certain cases would receive further clinical and laboratory study before being dismissed as nonsyphilitic and that certain syphilitic infections would not be missed.

Check specimens were submitted from a number of these cases. In many instances the reaction was persistently positive; in just as many others the reaction was decidedly diminished or frankly negative. In a few the Kolmer or Kahn test was found to give a reaction as well as the Kline exclusion. Because these check results seemed so varied, it was decided to disregard entirely any positive or doubtful Kline exclusion reactions accompanied by negative Kolmer and Kahn reactions until a more careful consideration of the problem could be undertaken. Accordingly, specimens giving such reactions were reported as negative.

In an effort to determine whether or not these positive Kline exclusion reactions accompanied by negative Kolmer and Kahn reactions were really significant, questionnaires were prepared and sent to each physician who had submitted such a specimen. Of 15,033 specimens submitted for diagnosis over a period of about seven months, there were 540, or 3.6 per cent, which were positive to the Kline exclusion test and negative to both the Kolmer and Kahn tests. These 540 specimens were divided as to the report given the physician. In 275 of them, representing 200 cases, the report was given as "doubtful serologic test." In the remaining 265, representing 253 cases, the report was given as negative. Of the 200 cases given doubtful reports, seventy-two, or 36 per cent, were checked by repeat specimens. Among the 253 cases given negative reports only twenty-two, or 8.7 per cent, were checked. Thus, when doubtful reports were sent out, physicians submitted four times as many check specimens as when negative reports were sent out. A few additional check specimens were received along with replies to questionnaires. Response to the questionnaires likewise differed in these two groups. In the 200 "doubtful" cases, replies were received from 72 per cent, whereas, in the 253 "negative" cases, replies were received from only 31.6 per cent. There was no evidence at any time to indicate that any physician interpreted "doubtful" as "positive."

The results on the repeat specimens in 157 checked cases of both groups were as shown in table 1.

From the Bureau of Bacteriology, Maryland State Department of Health.

1. Kline, B. S., and Young, A. M.: A Microscopic Slide Precipitation Test for Syphilis, J. A. M. A. **86**: 928 (March 27) 1926.

2. Kline, B. S., and Young, A. M.: A Microscopic Slide Precipitation Test for Syphilis, J. Lab. & Clin. Med. **12**: 477 (Feb.) 1927. Kline, B. S.: An Antigen for Use in Serum Tests for Syphilis, ibid. **13**: 588 (March) 1928; Microscopic Slide Precipitation Tests for the Diagnosis and Exclusion of Syphilis, ibid. **16**: 186 (Oct.) 1930; Microscopic Slide Precipitation Tests for the Diagnosis and Exclusion of Syphilis, Am. Soc. Clin. Lab. Techn. **1**: 4 (Nov.) 1934.

3. Gould, S. E.: A Comparison of the Standard Kahn and the Kline Tests Based on the Examination of 9,173 Blood Serums and 1,465 Spinal Fluids, Am. J. Syph., Gonor. & Ven. Dis. **21**: 72 (Jan.) 1937. Gray, J. D. Allan: A Comparison of the Wassermann, Kline and Meinicke Tests for Sera, Edinburgh M. J. **40**: 305 (June) 1933. Miller, Thomas H.: The Kline Slide Precipitation Test for Syphilis, Am. J. Syph., Gonor. & Ven. Dis. **13**: 583 (Oct.) 1929. Osmond, T. E., and Hughes, K. E.: Value of the Kline Test for Syphilis, Lancet **1**: 130 (Jan. 16) 1932. Proske, H. O., and Meriwether, F. V.: The Results of a Comparative Study of the Kahn and the Kline Tests for Syphilis, Ven. Dis. Inform. **13**: 59 (Feb.) 1932. Stewart, Henry V.: Notes on the Kline Precipitation Test for Syphilis, Am. J. Syph., Gonor. & Ven. Dis. **15**: 234 (April) 1931.

4. Cumming, H. S.; Hazen, H. H.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A.: The Evaluation of Serodiagnostic Tests for Syphilis in the United States, Ven. Dis. Inform. **16**: 189 (June) 1935. Parran, Thomas; Hazen, H. H.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A.: The Efficiency of State and Local Laboratories in the Performance of Serodiagnostic Tests for Syphilis, ibid. **18**: 4 (Jan.) 1937. Parran, Thomas; Hazen, H. H.; Mahoney, J. F.; Sanford, A. H.; Senear, F. E.; Simpson, W. M., and Vonderlehr, R. A.: A Comparative Study of Serodiagnostic Tests for Syphilis as Performed by Thirty-Nine State Laboratories, ibid. **18**: 273 (Aug.) 1937.

It appears that in nine of the 157 cases checked, or 5.7 per cent, the original Kline exclusion positive result was probably significant, since in later specimens this result was supported by a positive Kolmer or Kahn test and since the specificity of these two tests in our laboratory is very high. Two of these cases were indicated as primary syphilis, two as tertiary. Another primary case not included in this summary because check specimens were not sent to us later became Wassermann and Kahn positive at the Walter Reed Hospital in Washington. It would seem also that in fifteen additional cases, or 9.6 per cent, the original Kline exclusion positive test may have been significant, since in second specimens the Kahn or the Kolmer test was doubtful. In this group syphilis was indicated by the physicians in six cases.

The diagnoses given by the physicians for 234 cases in which the original specimens gave positive Kline exclusion results with negative Kolmer and Kahn results are given in table 2.

Thus in twenty-six, or 11.1 per cent, of the 234 cases syphilis was definitely indicated and in sixteen, or 6.8 per cent, the possibility was admitted.

To the laboratory worker it seems that the 5.7 per cent and 9.6 per cent of original Kline exclusion positive reactions later supported by positive or doubtful Kolmer or Kahn reactions and the 11.1 per cent definite and 6.8 per cent possible syphilis as determined by physical diagnosis are certainly significant. It seems also that the physician may be interested in having the information, but with the warning that diagnostic tests are negative and only a supersensitive test positive,

TABLE 1.—*Results of Check Specimens*

Result of Check Specimens	Group 1 Reported Doubtful	Group 2 Reported Negative	Total
Kline doubtful or negative, Kolmer and Kahn negative	44	26	70
Kline positive, Kolmer and Kahn negative	41	22	63
Kline positive, Kolmer or Kahn doubtful	12	3	15
Kline positive, Kolmer or Kahn positive	8	1	9
Total cases checked	105	52	157

TABLE 2.—*Diagnoses in Cases in Which Kline Exclusion Tests Were Positive and Kolmer and Kahn Results Negative*

Syphilis	26
Exposure to syphilis	16
Tuberculosis	8
Pregnancy	2
Encephalitis	1
Carcinoma	1
Arthritis	1
Rheumatic heart	1
Gonorrhea previously	1
Normal or unknown	177

and with the understanding that a very careful clinical examination and check-up is indicated as well as subsequent serologic tests. This matter has been discussed with physicians who favor such a policy, but many others feel that only harm could result from it. Because we believe that a public health laboratory should be conservative, we are continuing to disregard the unconfirmed positive Kline exclusion result in reporting to the physicians until they themselves express the desire for a report indicating supersensitive results.

SUMMARY AND CONCLUSIONS

1. It was shown that in definite instances the positive Kline exclusion test unconfirmed by the Kolmer or the Kahn test is significant of syphilitic infection.

2. It was shown that physicians tend to accept without question the negative serologic report, whereas a doubtful report elicits further clinical consideration and serologic check-up.

3. No evidence was found to indicate that doubtful reports were interpreted as positive.

4. Therefore a report giving some indication of the reaction of the very sensitive Kline exclusion test would seem to be an advantage to the patient and an aid to the physician.

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Clinical Notes, Suggestions and New Instruments

PREVENTION OF GONORRHEAL OPHTHALMIA IN THE NEWBORN

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In 1935 Lehrfeld[1] reported the results of a study of ophthalmia neonatorum in Philadelphia. He concluded that the incidence of this condition has not materially diminished in fifteen years and quoted Mayou as authority for the statement that in London there was only slight improvement in a similar period. In 27,873 newborn infants in six Philadelphia hospitals he found 632 cases of ophthalmia, in 28 per cent of which the condition was gonorrheal, an incidence of one case of gonorrheal ophthalmia to every 158 births.

In Cleveland in 1933 at four hospitals having 4,354 deliveries, gonorrheal ophthalmia developed in eighteen cases. In the same hospitals in 1935, with 4,637 births, there were thirteen cases. This represents a total of 8,991 births with thirty-one cases of gonorrheal ophthalmia, an incidence of one in 290.

In the present communication I present the experience at St. Luke's Hospital, the technic which my associates and I have developed and the results of this technic in over 10,000 successive deliveries. St. Luke's is a private hospital, maintaining about 15 per cent of free work for training of the house staff. The remainder of the deliveries are divided about equally between a group of half a dozen specialists and seventy-five general practitioners. Most of the nonpaying patients come through the antepartum clinic, and those with gonorrheal infection are rigorously excluded. The infants are therefore not exposed as freely as in some hospitals to the risks of gonorrheal infection.

Our present technic for care of the eyes of the newborn has been in use for about ten years. It was arrived at after extensive trial of various modifications of and departures from the original Credé method. I will mention some of these briefly and state the reasons for dissatisfaction with our earlier methods.

The original method of Credé, relying as it did on 1 drop of 2 per cent solution of silver nitrate, dispensed with a glass rod to insure uniformity in the size of the drop, produced silver conjunctivitis in many cases without eliminating all gonorrheal ophthalmia. Although we exercised the utmost care, infection occurred in about 0.5 per cent of our cases.

When we followed the application of silver nitrate with a saline irrigation after two minutes, we found more cases of gonorrheal infection, although the silver conjunctivitis diminished. We tried 2 or 3 drops of 1 per cent silver nitrate with and without subsequent saline irrigation. In the one instance the cases of irritation increased and in the other incidence of gonorrheal ophthalmia was larger. Flushing the eyes with several drops of 0.5 per cent silver solution with and without subsequent saline irrigation gave equally unsatisfactory results.

Other variations were tried, and we finally arrived at our present technic by a process of trial and error. We have used this procedure in over 10,000 successive cases in which gonorrheal ophthalmia was totally eliminated. In the last 3,000 deliveries the patient has been given every twelve hours during labor prophylactic vaginal injections of an aqueous solution of merthiolate, two parts of distilled water to one part of merthio-

From St. Luke's Hospital.

1. Lehrfeld, Louis: Limitations of Use of Silver Nitrate in Prevention of Ophthalmia Neonatorum, J. A. M. A. **104**: 1468 (April 27) 1935.

late solution. This was done with no thought of gonorrheal infection but may have offered some protection.

Our routine procedure is as follows:

1. At the time of delivery of the head, the eyes are carefully cleansed with dry sterile sponges. No boric acid solution is used.
2. When the cord has been cut, 3 or 4 drops of 0.5 per cent solution of silver nitrate are instilled and the lids are gently manipulated to distribute the solution to every part of the conjunctival sac. After forty-five seconds the sac is freely flushed with a 20 per cent solution of mild silver protein. This irrigation is repeated on three successive days as a routine part of the nursery technic. The substance must be completely dissolved. The solution is prepared twice weekly.

We think that the repeated conjunctival flushing with a bland silver preparation is vital to the success of the method. Our rationale of this technic is as follows:

1. Irrigation with a boric acid solution is not used; this solution is not a gonococcocide, and its use serves merely to introduce the organisms into the conjunctival sac.
2. We believe that the occasional late infection which was observed before the use of repeated irrigations with bland silver solution occurred as the result of the presence of a few organisms of reduced virulence, which are destroyed by the successive treatments.

We realize our relative freedom from cases of virulent gonorrheal vaginitis. The technic is presented in the hope that more extensive trial may be made of the procedure and its value determined.

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Special Article

THE PHARMACOLOGY AND THERAPEUTICS OF VITAMIN A

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This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—ED.

Treatment with vitamin A is indicated in disorders clearly due to deficiency of vitamin A in the diet. These disorders include nutritional night blindness, xerophthalmia, keratomalacia and a definite kind of follicular keratosis of the skin. The use of vitamin A in the prophylaxis of these disorders is also well established. It is appropriate to discuss these well defined uses of vitamin A before undertaking an analysis of the other uses proposed for vitamin A. Tests for loss of adaptation to dim light have been introduced recently as a measure of deficiency of vitamin A. These tests are considered in the section of this review dealing with night blindness.

Treatment with vitamin A has been suggested in conditions obviously not due to deficiency, for example, in hyperthyroidism, because experiments with animals demonstrate an antagonism between vitamin A and thyroxine. Vitamin A has also been used for the local treatment of injuries of the skin because of a supposed stimulating effect on epithelial growth. Vitamin A has been used in conditions which might be associated with deficiency of a moderate degree, but almost without exception the observers provided no evidence of the existence of the moderate deficiency. These conditions include urinary lithiasis and degenerative changes in the nervous system. As a rule, the evidence of benefit from the use of vitamin A in these conditions has been conflicting. The experiments with animals have not given uniformly positive results because the conditions of the experiments have been too varied. Although it cannot be concluded that deficiency of vitamin A is the sole cause of nervous degeneration or of lithiasis, it may be admitted that these abnormal conditions may be due to faulty diet, and there is hope that the exact dietary causes will be disclosed eventually.

Most observers find that severe deficiency of vitamin A is accompanied by decrease of resistance to infection. Vitamin A has been rather widely advocated to increase resistance to infection. The clinical evidence often fails to meet the requirements of statistics. Few of the observers have attempted to demonstrate the presence of vitamin A deficiency in their subjects.

Injury to animals results from large doses of vitamin A. These doses are far larger than any proposed for human beings. Ordinary doses of cod liver oil may be harmful to animals consuming unusual diets, especially herbivora. The injurious effects, at least in herbivora, are not due to the presence of vitamin A in the oil. Clinical experience would indicate that ordinary doses of fish liver oils are not injurious to human beings.

VITAMIN A AND THE EYE

Night Blindness.—Loss of visual acuity in dim light is known as night blindness. It occurs in various diseases of the eye such as toxic amblyopia, retinitis pigmentosa and detachment of the retina, but a form was known in the time of ancient Egypt which could be cured by a diet of liver. In more recent times, night blindness has been reported in prisoners, in Negro slaves in Brazil, in sailors on long voyages, in soldiers during the World War, and in Orthodox Russians during the Lenten fasts. Blegvad [1] found it in thirty-seven Danish cases of xerophthalmia. Ishihara [2] cured it with cod liver oil. Bloch [3] suggested that it is due to deficiency of vitamin A, which, in 1921, on purely clinical grounds, he distinguished from the antirachitic factor. Parinaud [4] suggested that visual adaptation to dim light is a function of visual purple in the retina. Because of these observations, Fridericia and Holm [5] and Holm [6] studied the formation of visual purple in the retinas of rats which received diets deficient in vitamin A. They found that the rate of regeneration of visual purple after its bleaching by a bright light in the living animal was less in the rats receiving the deficient diet than in the controls. The rats with deficient diet were also night blind. Tansley [7] confirmed

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2. Ishihara, S.: Zur Aetiologie der idiopathischen Hemeralopie bzw. Xerosis conjunctivae, Klin. Monatsbl. f. Augenh. **51**: 596 (Jan.-June) 1913.
3. Bloch, C. E.: Clinical Investigation of Xerophthalmia and Dystrophy in Infants and Young Children (Xerophthalmia et Dystrophia adiposogenetica), J. Hyg. **19**: 283 (Jan.) 1921.
4. Parinaud, M.: L'héméralopie et les fonctions du pourpre visuel, Compt. rend. Acad. d. sc. **93**: 286 (July) 1881.
5. Fridericia, L. S., and Holm, E.: Experimental Contribution to the Study of the Relation Between Night Blindness and Malnutrition: Influence of Deficiency of Fat Soluble A-Vitamin in the Diet on the Visual Purple in the Eyes of Rats, Am. J. Physiol. **73**: 63 (June) 1925.
6. Holm, E.: Demonstration of Hemeralopia in Rats Nourished on Food Devoid of Fat-Soluble A-Vitamin, Am. J. Physiol. **73**: 79 (June) 1925.
7. Tansley, Katharine: The Regeneration of Visual Purple: Its Relation to Dark Adaptation and Night Blindness, J. Physiol. **71**: 442 (April) 1931.

these observations. Yudkin, Kriss and Smith [8] showed that the fat extracted from the retina is one of the richest sources of vitamin A and suggested that visual purple may bear a direct structural relationship to vitamin A. Wald [9] has shown that, in mammals, birds, amphibians and certain marine fish, vitamin A unites in the retina with a protein to form visual purple. This process takes place continuously and depends on a sufficient supply of vitamin A. Under the influence of light, visual purple is changed to visual yellow; a portion of the visual yellow reverts, in the dark, to visual purple; another portion undergoes decomposition into vitamin A and a protein. It is apparent that vitamin A takes part in a cycle of changes in the retina and that the rate of formation of visual purple after exposure of the retina to bright light depends on the available supply of vitamin A. The chemical processes involved in vision are the subjects of active study at the present time (Mirsky,[10] Hecht,[11] Dartnall and Goodeve,[12] the von Jancsós [13]).

The facts just presented, together with the observation that night blindness is an early symptom of deficiency of vitamin A, form the basis of recent tests for visual adaptation in dim light as methods for the diagnosis of vitamin A deficiency. Hart, Mead and Guilbert [14] observed spontaneous night blindness in cattle during a severe drought and proved that the visual defect was due to the very low carotene content of the food. By means of accurate clinical observations of the symptom night blindness and by analyses of the organs and of the rations for vitamin A and for carotene, their subsequent studies [15] have shown that night blindness occurs only when the stores of vitamin A in the liver are practically exhausted; the daily requirement of carotene for cattle, sheep and swine depends only on the weight of the animals and does not depend on the rate of growth, the dose being from 25 to 39 micrograms per kilogram of body weight. This amount agrees closely with that found for the rat (25 micrograms per kilogram daily) by Baumann, Riising and Steenbock.[16] When vitamin A is given as cod liver oil, the requirements are the same for the different species of animal and depend only on the weight. The authors give provisional figures of from 5.6 to 8.4 micrograms per kilogram of body weight for the daily requirement of vitamin A.

Studies of dark adaptation in children have been carried out by Jeans and his colleagues,[17] who used at first the Birch-Hirschfeld photometer and later an improved photometer. In their method the subject is placed in the dark for ten minutes and then exposed to bright light for three minutes. During the following ten minute period of recovery, tests for visual acuity are made. The subject must be able to cooperate by stating accurately what he sees. Normal standards were obtained by testing persons known to have been eating diets rich in vitamin A. Jeans reported in 1933 that 25 per cent of rural children and 53 per cent of city children showed poor visual adaptation; later, in a smaller series, about the same incidence was found. The administration of cod liver oil or of carotene equivalent to from 5,000 to 6,000 international units of vitamin A daily brought about recovery in from four to six weeks. The minimum daily requirements for vitamin A in two boys 11 years of age were found to be about 3,000 units. Snelling at first [18] agreed with the results of Jeans but later [19] encountered technical difficulties in using the Birch-Hirschfeld apparatus and stated his belief that experience with the test by the subject might account for some of the "improvement" in readings following the use of cod liver oil. Palmer and Blumberg [20] have presented convincing evidence that improvement in visual acuity with repetition of the test may be due to practice and that variations among normal children are so great that the results of single tests are unreliable. Park [21] has used the method with adults but gives impressions rather than statistics. Jeghers [22] calls attention to the prevalence and the importance of night blindness in drivers of automobiles. He has also reviewed [22b] the literature on night blindness as a criterion of vitamin A deficiency and has added [22c] observations on adults, using the method of Jeans.

Edmund and Clemmesen [23] have used as a criterion for loss of visual acuity in dim light the power of distinguishing simple geometric forms. Friderichsen and Edmund [24] use for their criterion the faintest illumination to which a child reacts when his eye is fully adapted to darkness. The investigator observes reflex movements—squeezing together of the lids, oculomotor

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16. Baumann, C. A.; Riising, B. M., and Steenbock, Harry: Fat Soluble Vitamins: XL. The Growth Method of Determining Vitamin A, Ztschr. f. Vitaminforsch. **3:** 81 (April) 1934.

17. Jeans, P. C.: Vitamin Deficiency in Childhood, Minnesota Med. **16:** 688 (Nov.) 1933. Jeans, P. C., and Zentmire, Zelma: Prevalence of Vitamin A Deficiency Among Children in Iowa, Am. J. Dis. Child. (Society Transactions) **48:** 928 (Oct.) 1934; A Clinical Method for Determining Moderate Degrees of Vitamin A Deficiency, J. A. M. A. **102:** 892 (March 24) 1934; The Prevalence of Vitamin A Deficiency Among Iowa Children, ibid. **106:** 996 (March 21) 1936. Jeans, P. C.; Blanchard, Evelyn, and Zentmire, Zelma: Dark Adaptation and Vitamin A, ibid. **108:** 451 (Feb. 6) 1937.

18. Snelling, C. E.: Vitamin A Deficiency in Children, Am. J. Dis. Child. (Society Transactions) **51:** 484 (Feb.) 1936.

19. Snelling, C. E.: A Study of the Birch-Hirschfeld Photometric Test for Vitamin A Deficiency, J. Pediat. **9:** 655 (Nov.) 1936.

20. Palmer, C. E., and Blumberg, H.: The Use of a Dark Adaptation Technic (Biophotometer) in the Measurement of Vitamin A Deficiency in Children, Pub. Health Rep. **52:** 1403 (Oct. 8) 1937.

21. Park, I. O.: Preliminary Observations on Vitamin A Deficiency as Shown by Studies with the Visual Photometer, J. Oklahoma M. A. **28:** 257 (Oct.) 1935; Further Observations on Vitamin A Deficiency as Shown by Studies with the Visual Photometer and Clinically, ibid. **29:** 129 (April) 1936; Significance of Vitamin A Deficiency, editorial, Am. J. Digest. Dis. & Nutrition **3:** 193 (May) 1936.

22. (*a*) Jeghers, Harold: Night Blindness Due to Vitamin A Deficiency: Consideration of Its Importance in Traffic Problems, New England J. Med. **216:** 51 (Jan. 14) 1937; (*b*) Night Blindness as a Criterion of Vitamin A Deficiency: Review of the Literature with Preliminary Observations of the Degree and Prevalence of Vitamin A Deficiency Among Adults in Both Health and Disease, Ann. Int. Med. **10:** 1304 (March) 1937; (*c*) The Degree and Prevalence of Vitamin A Deficiency in Adults, with a Note on Its Experimental Production in Human Beings, J. A. M. A. **109:** 756 (Sept. 4) 1937.

23. Edmund, C., and Clemmesen, S.: On Deficiency of A Vitamin and Visual Dysaptation, Copenhagen, Levin and Munksgaard, 1936; London, Humphrey Milford, Oxford University Press, 1936, pp. 1-77.

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movements, turning the head toward the light. The authors make the surprising statements that improvement in visual acuity may occur within half an hour after the administration of halibut liver oil and that in some cases in which improvement has not occurred after administration of cod liver oil or halibut liver oil prompt improvement occurs after the administration of a preparation of spinach. Their method does not determine the rate at which visual purple is regenerated in light or in darkness as does that of Jeans, but it has the advantage that it can be applied to infants.

It is evident that the use of the methods described requires a certain amount of practice. Since they apparently reveal an incidence of night blindness far greater than any one had supposed might exist, confirmation of the conclusions of the various authors is needed. The retina obtains its vitamin A from the blood. It is known that vitamin A may disappear from the blood during starvation and during infections, even though considerable stores may remain in the liver.[25] Consequently, further observations are necessary in order to establish the value of tests of adaptation in dim light as a criterion of the reserves of vitamin A in the body.

Xerophthalmia and Keratomalacia. — These are symptoms of severe deficiency of vitamin A. Xerophthalmia, or dryness of the conjunctivae, is associated with atrophy of the para-ocular glands, with metaplasia of the epithelium of the glands and conjunctivae, and with loss of sensation in the conjunctiva, especially affecting the cornea. At first the dryness may be overlooked and may be associated with photophobia.[22c] Triangular white spots—Bitôt's spots—appear in the palpebral fissure; irregular wrinkled patches of xerosis are found over the bulbar conjunctivae and later over the cornea. A characteristic light brown pigmentation develops in the conjunctiva.[26] The superficial layers of the cornea degenerate. In the final stage, corneal softening, or keratomalacia, develops; severe impairment of vision results and permanent blindness is likely to follow.[27]

Xerophthalmia is rare in the United States. A few clinical and pathologic studies have been published.[28] The disease may appear in epidemic form during periods of famine or in persons receiving a deficient diet for some other reason. It has been observed in prisoners, slaves and workmen.[29] A very remarkable epidemic occurred during the World War in Denmark as a result of extensive exportation of dairy products and of the use of cheaper fats lacking in vitamin A for food.[30]

The Treatment of Night Blindness Due to Vitamin A Deficiency.—Patients with normal power to absorb carotene and vitamin A may be treated by diet alone; the diet should include liberal amounts of milk, butter and green vegetables; cod liver oil or some other preparation of vitamin A or of carotene also should be administered. An improvement in dark adaptation may be demonstrable in a few minutes or hours after the ingestion of highly potent fish liver oils.[24] Jeghers [22c] reports that visual acuity was restored within two or three weeks in adults with night blindness who received a daily dose of carotene equivalent to 10,000 units of vitamin A. In certain rare cases, gastro-intestinal disease may result in faulty absorption, as in the patient of Wilbur and Eusterman,[31] whose diet had been adequate but who recovered from night blindness only after repair of a gastro-colic fistula.

SKIN

Dryness and scaliness of the skin, with a tendency to infection, were described in cases of xerophthalmia by Pillat.[32] Characteristic lesions of the human skin due to vitamin A deficiency were first recognized as such by Frazer and Ch'uan-K'uei [33] in Chinese soldiers. Later reports confirm their results and add a few facts.[34] The lesions usually occur in sexually mature persons between 16 and 30 years of age and not in infants. They are much more frequent in men than in women. Ninety per cent of the patients have obvious ocular manifestations of vitamin A deficiency. The lesions appear first on the anterolateral surface of the thighs and posterolateral portion of the upper forearms and later spread to adjacent areas of the skin. They consist of pigmented papules, up to 5 mm. in diameter, at the site of the hair follicles, from which project keratotic plugs. In about one third of the cases, pustules develop. The skin is not oily and does not sweat. Microscopic section shows atrophy of the pilosebaceous glands with metaplasia and hyperkeratinization of the epithelium. Secondary infection may occur but hemorrhage does not. The treatment consists of a diet including butter, eggs, liver and cod liver oil (as much as 30 cc. a day). The first sign of improvement is a return of moisture to the skin. The keratotic papules heal slowly after a few weeks.

GASTRO-INTESTINAL TRACT

The Absorption of Vitamin A and of Carotene.—Drummond, Bell and Palmer [35] studied the absorption of vitamin A and carotene in a patient with a fistula of the thoracic duct opening into the pleural cavity.

25. Clausen, S. W.: Limits of the Anti-Infective Value of Provitamin A (Carotene), J. A. M. A. **101**: 1384 (Oct. 28) 1933.

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31. Wilbur, D. L., and Eusterman, G. B.: Nutritional Night Blindness: Report of a Case, J. A. M. A. **102**: 364 (Feb. 3) 1934.

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Analysis of the fluid from the chest, made after the administration of vitamin A or of carotene by mouth, showed that very little of the carotene had passed into the chylous fluid, whereas nearly all of the vitamin A could be recovered. The vitamin A of natural oils and fats occurs as an ester; in preparations made by saponification it occurs as a free alcohol. When the vitamin was administered as the free alcohol, it was found in the lymph mainly in the esterified condition. It therefore appears that the mechanism of absorption of vitamin A includes linkage with fatty acids, probably in the intestinal wall. Such linkage is impossible in the case of the hydrocarbon carotene, a fact that may explain its lower coefficient of absorption. There is evidently always some loss of vitamin A or of carotene in the stools; in diets low in vitamin A, a negative balance may be demonstrated.[36] Nothing is known about the degree of destruction of vitamin A or of carotene in the gastro-intestinal tract under normal or pathologic conditions. If liquid petrolatum is administered with the vitamin, considerable loss occurs.[37] The loss is not so great if the oil is administered separately, and the effect is much greater in the case of carotene than in the case of vitamin A itself.

Exclusion of bile from the alimentary tract interferes with absorption of carotene and possibly of vitamin A. Altschule[38] found microscopic evidence of vitamin A deficiency in six of eleven infants dying of congenital atresia of the bile ducts. In rats in which a fistula had been made between the gallbladder and the colon and which had been fed diets free of vitamin A, Greaves and Schmidt[39] found that carotene was not absorbed. If glycodeoxycholic acid or deoxycholic acid was administered with the carotene, it was absorbed. Vitamin A, as such, was however absorbed by the rat with the internal bile fistula.

During infections, both carotene and vitamin A are poorly absorbed.[40]

Patients with steatorrhea absorb vitamin A poorly.[41]

The faulty absorption of carotene from the gastro-intestinal tract—and in some cases, of vitamin A—under the conditions just discussed explains the occurrence of symptoms of vitamin A deficiency in persons consuming adequate diets, and the occasional failure of therapy with vitamin A or carotene when given by mouth. In certain rare cases, it may be advisable to administer vitamin A or carotene by injection, as in a case observed by Bloch.[42]

Vitamin A in the Treatment of Gastro-Intestinal Disorders.—Manville[43] stated that the secretion of gastric mucus was decreased in rats fed diets deficient in vitamin A but that the secretion of acid was not impaired. The p_H of the gastric contents fell from normal values of 3.4 to 3.0-2.5 during avitaminosis. Gastric ulcers were found in from 60 to 100 per cent of the rats. The feeding of Fogelson's mucin did not relieve the ordinary symptoms of avitamosis but tended to cure the ulcers. In a later paper Manville[44] found that the number of mucus-secreting elements of the intestinal tract decreased, exposing the mucous membrane to injury from solid components of the food and feces. Occult blood in the stools was the earliest evidence of deficiency of vitamin A. Olcott[45] was unable to find ulceration of the gastro-intestinal tract in avitaminosis A.

Boller[46] has treated cases of hypo-acidity and of gastric and of duodenal ulcer with vitamin A, stating that increase in gastric acidity resulted and that symptoms and signs of ulcer diminished.

Obviously, the experimental basis for the use of vitamin A in gastro-intestinal disorders is not yet clearly established.

THYROID

In 1926 Abelin[47] observed that the toxic effects due to feeding thyroid gland to rats could be lessened by diets rich in cod liver oil or in egg yolk. He later published extensive studies[48] showing the beneficial effects of diets high in protein, fats and bone marrow, provided cod liver oil, egg yolk and dried powdered vegetables also were included in the diets. His purpose was to devise a diet for the treatment of hyperthyroidisms in man; he did not direct his studies to the discovery of any one particularly beneficial constituent. That step was taken by von Euler and Klussmann.[49] In their experiments, rats were fed diets in which the only source of vitamin A was known amounts of carotene. The loss in weight of the animals due to daily injections of thyroxine could be prevented by the administration of carotene. In the following year Abelin[50] showed that injections of thyroxine decrease the stores of carotene and vitamin A in the liver of guinea pigs consuming a diet very low in carotene and receiving intraperitoneal injections of colloidal carotene. According to Eufinger and Gottlieb,[51] the metamorphosis of tadpoles treated with thyroxine may be delayed by the administration of human plasma or of vitamin A. Fasold and Peters[52] repeated the experi-

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51. Eufinger, H., and Gottlieb, J.: Wirkungskoeffizienten des Thyroxineffektes im biologischen Versuch, Klin. Wchnschr. **12:** 1397 (Sept. 9) 1933.

52. Fasold, H., and Peters, H.: Ueber den Antagonismus zwischen Thyroxin und Vitamin A, Ztschr. f. d. ges. exper. Med. **92:** 57, 1933-1934.

ments of von Euler and Klussmann and of Abelin, using a concentrate of fish liver oil ("Vogan" [53]) as the source of vitamin A instead of carotene. The dose was so large (1 cc., or 40,000 units of vitamin A daily) that symptoms of hypervitaminosis were produced. These symptoms could be prevented by administration of thyroxine and could be cured, if paralysis had not developed. These authors demonstrated that thyroxine does not prevent the conversion of carotene to vitamin A in the rat and that the beneficial results in hypervitaminosis are due to the rapid destruction of the vitamin. There is in fact evidence that the conversion of carotene to vitamin A may be deficient in hypothyroidism. The milk of goats consuming their normal diet is pure white; after thyroidectomy the milk becomes yellow. Fasold and Heidemann [54] showed that the yellow color of such milk is due to carotene and that vitamin A is no longer present in it. The liver of guinea pigs after thyroidectomy contains carotene but no vitamin A.[55] Wendt [56] reported that the blood plasma of persons with cretinism contains little vitamin A; after oral administration of carotene there is little rise in the vitamin A of the plasma. This, according to Wendt, is due to a failure of conversion of carotene to vitamin A in cretinism. In hyperthyroidism low values of vitamin A are also found; in this case, because of rapid destruction of vitamin A. After successful treatment with iodine or by surgery, the values increase. After a large dose of vitamin A, the rise in plasma vitamin A is less marked and is more transient than in normal persons.

The evidence just presented appears to indicate that an antagonism exists between the action of thyroxine and that of vitamin A. It must be pointed out, however, that relatively large doses of both substances were used; also that few animals were used in some of the experiments. It seems reasonable to conclude that vitamin A may be more rapidly destroyed by an organism in which the metabolic rate is increased from any cause, including hyperthyroidism. But it is not so easy to understand how vitamin A can decrease the activity of thyroxine. A few observations have been published to show that thyroxine is destroyed in vitro by carotene.

Treatment of Adolescent Goiter with Vitamin A.—Fasold [57] administered "Vogan" (30 drops, three times a day) to seven girls with adolescent goiter; none had signs of hypothyroidism or hyperthyroidism. After three or four weeks the struma in each case had regressed to a remarkable degree, but several weeks after the drug was discontinued the struma recurred. The effect cannot necessarily be ascribed to vitamin A, for "Vogan" in the dose mentioned would furnish about 3.6 micrograms of iodine a day.[58]

Treatment of Hyperthyroidism with Vitamin A.—Wendt [58] states that after large daily doses of "Vogan" (30 drops, three times a day, the total, 90 drops, contains about 3.6 micrograms of iodine and 145,000 "biologic units" vitamin A) three patients gained weight and their basal metabolic rate returned nearly to normal; two other patients improved. Dietrich [59] noted improvement in three of six patients (apparently permanent improvement in two) and none in two. The improvement required weeks. Abelin [60] regards the use of vitamin A as an aid in the treatment with iodine and with diidotyrosine, stating that it greatly lessens the crises and the temporary exacerbations that are liable to occur with these forms of medication. Obviously, no conclusions as to the value of vitamin A in this disease are justified until more cases are reported and until the reports deal more critically with the other factors which may bring about improvement, especially the factors associated with the other constituents of the preparations used, with rest and with improved mental outlook.

URINARY SYSTEM

Urinary Lithiasis.—The assertion that diets deficient in vitamin A may cause urinary calculus and that the administration of vitamin A together with an acid ash diet may aid in the solution of urinary calculi has been recently reviewed by the Council on Pharmacy and Chemistry.[61] The Council concludes that there is no doubt that urinary stone may be produced in experimental animals by diets deficient in vitamins A and D and unbalanced in mineral content.[62] But the majority of investigators fail to find that a deficiency of vitamin A alone will cause stone. Higgins [63] is the chief proponent of the claim for the specific effect of lack of vitamin A in the production of urinary stone in man and of its solution by acid ash diets and vitamin A. Kayser, who discussed the paper of Higgins, pointed out that lithiasis, when it does occur in the rat with avitaminosis, is a very late manifestation. Children with deficiency of vitamin A rarely have calculi. In human beings with calculi, epithelial keratinization, the specific lesion of avitaminosis A, is lacking. In a large series of cases of stone, Kayser has failed to find evidence of dietary deficiency in a single case. Many of his patients had had diets rich in milk and eggs. In his experimental and clinical work, Higgins did not try separately the effects of administering vitamin A and acid-producing salts. Since the report was published, Oppenheimer and Pollack [64] have treated a series of cases of urinary stone with diets rich in vitamins A, B, D, E and G and having an acid ash, administering sufficient ammonium chloride to assure an acid reaction in the urine (p_H below 5.2). Fifty-two patients with stone were studied; twenty-seven were observed for from six to sixteen months (on the average eleven months). In two, uremia and acidosis seemed to have been precipitated by the regimen. In none of the subjects was even partial solution of the calculi demonstrable by x-ray examination; in five, the size of the stone increased and in one, a new stone formed during the treatment.

It may be concluded that, although urinary calculi may be produced in experimental animals by feeding

53. "Vogan" is a concentrate of fish liver oils; 1 cc. contains 40,000 rat units of vitamin A, an unstated amount of vitamin D, and about 6 micrograms of iodine.

54. Fasold, H., and Heidemann, E. R.: Ueber die Gelbfärbung der Milch thyreopriver Ziegen, Ztschr. f. d. ges. exper. Med. **92**: 53, 1933-1934.

55. Schneider, E., and Widmann, E.: Die Hepatohormonale Steuerung des Vitamin-A-Umsatzes und die Aetiologie der Ostitis deformans Paget, Klin. Wchnschr. **14**: 1786 (Dec.), 1935.

56. Wendt, H.: Ueber Veränderungen im Karotin-Vitamin-A-Haushalt beim Myxödem und bei Kretins, München. med. Wchnschr. **82**: 1679 (Oct.) 1935.

57. Fasold, H.: Ueber die Wirkung des Vitamin A auf das Ovar des Puberstätsalters, Klin. Wchnschr. **16**: 90 (Jan. 16) 1937.

58. Wendt, H.: Ueber die Behandlung der Basedow'schen Krankheit mit grossen Dosen Vitamin A (Vogan), München. med. Wchnschr. **82**: 1160 (July) 1935.

59. Dietrich, H. E.: Vitaminbehandlung der Schilddrüsenüberfunktion mit Vogan, München. med. Wchnschr. **83**: 313 (Feb.) 1936.

60. Abelin, I.: Ueber die medikamentöse Anwendung des A-Vitamins bei der Hyperthyreose, Schweiz. med. Wchnschr. **66**: 1106 (Nov.) 1936.

61. Vitamin A and Urinary Lithiasis, Reports of the Council on Pharmacy and Chemistry, J. A. M. A. **105**: 1983 (Dec. 14) 1935.

62. McCarrison, Robert: The Experimental Production of Stone in the Bladder, with a Note on Pernicious Anemia and Epidemic Dropsy, Indian J. M. Research **14**: 895 (April) 1927; The Experimental Production of Stone in the Bladder, Brit. M. J. **1**: 717 (April 16) 1927. van Leersum, E. C.: Vitamin A Deficiency and Urolithiasis, J. Biol. Chem. **76**: 137 (Jan.) 1928.

63. Higgins, C. C.: Production and Solution of Urinary Calculi, J. A. M. A. **104**: 1296 (April 13) 1935.

64. Oppenheimer, G. D., and Pollack, Herbert: Attempted Solution of Renal Calculi by Dietetic Measures, J. A. M. A. **108**: 349 (Jan. 30) 1937.

special diets, the factors involved are not yet clearly defined. Further study is required before the results can be applied to man. The view that diets deficient in vitamin A cause urinary lithiasis in man is not supported by the clinical evidence.

REPRODUCTIVE SYSTEM

In the Male.—It has been shown that the testes of rats degenerate in the course of deficiency of vitamin A. Evans [65] has demonstrated that males eating a diet free of vitamin A but adequate in vitamin E become sterile in three months, whereas those receiving adequate vitamin A but no vitamin E do not become sterile until later. The effects of moderate deficiency of vitamin A on fertility in man are unknown, nor is anything known about the relative importance of moderate deficiency in men and in women.

In the Female.—The vaginal mucous membrane becomes permanently cornified in animals deprived of vitamin A. Observation of the vaginal smear may be used as a method of detecting vitamin A deficiency.[66] In castrated female rats in which vitamin A deficiency has been produced, injections of the principle from human placenta fail to cause the appearance of mucoid cells in the vagina; [67] and in castrated female mice with diets deficient in carotene and vitamin A, estrus can be produced by injections of estrogen together with the administration of carotene, but not by estrogen or by the carotene alone.[68] In uncastrated rats, Mason and Ellison,[69] by the use of the lavage method of obtaining smears stained supravitally with neutral red, have been able to demonstrate the presence of estrous cycles even in A-deficient animals in which abnormal cornification has become too severe to permit of their identification by dry stained smears. In castrated animals, small numbers of cornified cells continue to appear even after vitamin A therapy. It is therefore evident that the influence of deficiency of vitamin A on the estrous cycle is not only directly on the vaginal mucous membrane but on or through the ovary also. The effect on the hypophysis is as yet unknown. The influence of excessive doses of vitamin A (as carotene) on the sexual functions of female rats has been studied by Sherwood, Brend and Roper.[70] In rats receiving a daily dose of carotene equivalent to from 1,500 to 3,750 international units of vitamin A per day, the vaginal smears did not progress from the stage of nucleated epithelium to that of cornified cells. Normal estrous cycles did not return for twenty days after the feeding of the carotene had been discontinued. During the period of ingestion of the carotene, the rats showed no desire to copulate.

In Human Subjects.—Simpson and Mason [71] report that the administration of cod liver oil or of halibut liver oil relieved symptoms and pathologic signs in thirty cases of senile vaginitis. Fasold [57] administered a concentrate of fish liver oil ("Vogan"; 30 drops, three times a day = 145,000 international units of vitamin A) to seven adolescent girls with large goiters of puberty. In four of the girls the menses ceased for the period of seven months during which vitamin A was administered and were resumed from four to six weeks after the treatment was discontinued. Menstrual disturbances that had been complained of before the treatment did not reappear.

THE BLOOD AND BLOOD FORMING ORGANS

Anemia and Vitamin A Deficiency. — French authors [72] report that regeneration of hemoglobin and red cells in the anemia induced in dogs by repeated bleedings is facilitated by the administration of carotene. This work lacks confirmation. In seven patients among thirty-five with keratomalacia, Pillat and Yang [73] found an anemia which they believe could be explained only as a result of deficiency of vitamin A and which was cured rapidly with cod liver oil. The belief that pernicious anemia is associated with deficiency of vitamin A in the diet has now been discredited. It seems clear that anemia is not a regular symptom of deficiency of vitamin A, and the use of vitamin A for the treatment of the anemias does not rest on a secure foundation.

The Thrombocytes and Vitamin A.—The assertion of Cramer, Drew and Mottram [74] that the number of thrombocytes is diminished in avitaminosis A seems to have been disproved by Bedson and Zilva,[75] who used more accurate methods of counting the blood platelets, and by Falconer and Peachey.[76] Their control animals, however, received a perfectly normal diet and not the basal diet plus vitamin A. Lorenz [77] believed that "Vogan," a concentrate of fish liver oil, enables the body to "regulate" the number of thrombocytes. In children and in guinea pigs he observed that, following the administration of the drug, originally low platelet counts rose, originally high counts fell. He attributes this effect to vitamin A. Schiff and Hirschberger [78] at first agreed but later stated that the solvent in "Vogan," sesame oil, contains a hitherto undescribed substance which they designate as vitamin T, which causes a rise in blood platelets.

The Granulocytes and Vitamin A.—Crimm and Short [79] state that the earliest manifestation of cellular changes associated with vitamin A deficiency in dogs and rats is a "neutrophil index lag"; large doses of vitamin A administered to normal animals or to normal

65. Evans, H. M.: Testicular Degeneration Due to Inadequate Vitamin A in Cases Where Vitamin E Is Adequate, Am. J. Physiol. **99:** 477 (Jan.) 1932.

66. Baumann, C. A., and Steenbock, Harry: Vaginal Smear Method of Determining Vitamin A, Science **76:** 417 (Nov. 4) 1932. Hohlweg, Walter, and Dohrn, Max: The Determination of Vitamin A by Means of Its Influence on the Vaginal Contents of the Rat, Biochem. J. **30:** 932 (May) 1936.

67. Aberle, S. B. D.: The Interrelation of a Gonadotropic Hormone and Vitamin A, Am. J. Physiol. **106:** 267 (Nov.) 1933.

68. von Euler, H.; Zondek, Bernhard, and Klussmann, E.: Carotinoide, Vitamin E, und Sexualhormone, Arkiv. för Kemi, Mineralogi och Geol., 1932, 11B, No. 2, pp. 1-5.

69. Mason, K. E., and Ellison, E. T.: Changes in the Vaginal Epithelium of the Rat After Vitamin A Deficiency, J. Nutrition **9:** 735 (June) 1935; Demonstration of Oestrus in the Vitamin A Deficient Rat by Supravital Study of the Vaginal Smears, ibid. **10:** 1 (July) 1935.

70. Sherwood, T. C.; Brend, M. A., and Roper, E. A.: Changes in the Vaginal Epithelium of the Rat on an Excessive Vitamin A Diet, J. Nutrition **11:** 593 (June) 1936.

71. Simpson, J. W., and Mason, K. E.: A New Concept of Senile Vaginitis, Am. J. Obst. & Gynec. **32:** 125 (July) 1936.

72. Binet, L., and Strumza, M. V.: Le carotène, son pouvoir hématopoiétique, Presse méd. **40:** 41 (Jan. 9) 1932.

73. Pillat, Arnold, and Yang, C. S.: The Blood Picture in Keratomalacia of Adults, Arch. Ophth. **4:** 309 (Sept.) 1930.

74. Cramer, W.; Drew, A. H., and Mottram, J. C.: On the Function of the Lymphocyte and of Lymphoid Tissue in Nutrition, with Special Reference to the Vitamin Problem, Lancet **2:** 1202 (Dec. 10) 1921.

75. Bedson, S. P., and Zilva, S. S.: The Influence of Vitamin A on the Blood Platelets of the Rat, Brit. J. Exper. Path. **4:** 5 (Feb.) 1923.

76. Falconer, E. H., and Peachey, G.: Blood Counts in Vitamin A Deficiency Disease, with Special Reference to the Platelets, Am. J. Physiol. **76:** 145 (March) 1926.

77. Lorenz, E.: Der Einfluss des A-Vitamins auf die Thrombocyten, Ztschr. f. Kinderh. **58:** 504 (Dec.) 1936.

78. Schiff, E., and Hirschberger, C.: Weitere Untersuchungen zur Frage des Morbus maculosus Werlhofi: II. Einfluss der Vitamine A, B_1, B_2, C, D und des Eigelbs auf die Zahl der Thrombozyten bei gesunden Kindern Jahrb. f. Kinderh. **146:** 181, 1935; Weitere Untersuchungen zur Frage des Morbus maculosus Werlhofi: III. Einfluss der Vitamine C, A, B_2 und des Eigelbs auf die Zahl der Thrombozyten und die Blutungszeit beim Morbus mac. Werlhofi, ibid., p. 191; Weitere Untersuchungen zur Frage des Morbus maculosus Werlhofi: IV. Ein bisher unbekannter Thrombozytose herbeiführender Stoff, der fettlösliche T-Faktor, ibid., p. 293; Weitere Untersuchungen zur Frage des Morbus maculosus Werlhofi: V. A-Vitamin und Thrombozytose, ibid. **147:** 81, 1936.

79. Crimm, P. D., and Short, D. M.: Qualitative Blood Cell Changes in the Rat Due to Vitamin A, Am. J. Physiol. **111:** 397 (March) 1935; Qualitative Blood Cell Changes in the Human Due to Vitamin A, J. Indiana M. A. **28:** 175 (April) 1935; Vitamin A Deficiency in the Dog, Am. J. Physiol. **118:** 477 (March) 1937

persons (70,000 international units daily) cause a shift to the left in the neutrophilic index. This shift is not due to vitamin D. It would seem evident from this work that the lag is not marked enough to be of value in the diagnosis of avitaminosis; the shift to the left requires large amounts of vitamin A administered over a long period and is not present in active infections, possibly because a shift has already occurred.

It may be concluded that no very striking effect of vitamin A on the cellular elements of the blood has been discovered.

VITAMIN A AND THE NERVOUS SYSTEM

Edward Mellanby [80] stated that, when diets containing a large amount of cereal (other than yellow maize) and deficient in vitamin A are eaten by young puppies, degenerative changes occur in the spinal cord; demyelinization can be demonstrated by the Marchi stain. The presence of any source of vitamin A in the diet (cod liver oil, butter or carotene) prevents or diminishes this change. He believed that the nervous symptoms in convulsive ergotism, pellagra, lathyrism, the subacute combined degeneration in pernicious anemia, tabes dorsalis and multiple sclerosis may be related to deficiency of vitamin A. In 1935 Mellanby [81] reported demyelinization, chiefly of the peripheral nervous system, in growing rabbits consuming a diet poor in vitamin A and reiterated his belief that diets high in cereal aggravate the condition. Later he ascribed the metaplasia of specific epithelium to lesions of the trophic nerve fibers due to deficiency of vitamin A.

Using adult dogs, Suzman, Muller and Ungley [82] were unable to produce lesions in the nervous system or abnormal nervous symptoms as a result of the ingestion of diets free of vitamin A and containing an excess of cereal. Their animals, at least toward the end of the experiment, had exhausted their stores of vitamin A. In a certain number of rats, but not in all, consuming diets deficient in vitamin A, Zimmerman [83] and Zimmerman and Cowgill [84] were able to observe incoordination and muscular weakness. In these rats only they observed degeneration of the spinal cord and of the peripheral nerves. The diets contained no cereal but contained an adequate amount of unsaturated fatty acids. Sutton, Setterfield and Krauss [85] were able to demonstrate in frozen sections with polarized light myelin degeneration of the peripheral nerves in rats receiving a diet deficient in vitamin A. The degeneration occurred at about the same time as did xerophthalmia. Aberle [86] found that the appearance of nervous symptoms was always later than the continuous appearance of cornified vaginal cells.

Bartz and Schmitt [87] were able to demonstrate by satisfactory methods the presence of relatively large amounts of carotene and of vitamin A in the peripheral nerves of frogs and to show that starvation depletes the supply whereas feeding with carotene restores both the carotene and the vitamin A content.

More knowledge is obviously required as to (*a*) the function of vitamin A in the nervous system, (*b*) the other deficiencies in the diets used, (*c*) the influence of the age of the subject, and (*d*) the possible specific effects of cereals, before any intelligent application can be made of this experimental work to the treatment of nervous disorders in man.

TUMORS

The incorrect assumption that vitamin A is the "growth vitamin" has led several investigators to study the effect of vitamin A on the growth of tumors. The conflicting results were summarized by Baker.[88] She was able to show that highly purified vitamin A—but not carotene—in suitable concentration stimulates the growth of fibroblasts in tissue culture; higher concentrations are distinctly toxic. Kuh [89] reported that the amount of vitamin A present in the usual diet has no effect on the growth of transplanted tumors in mice but that large doses of carotene inhibit the growth of such tumors, provided the animal can convert the carotene to vitamin A. The effective dose on the basis of weight would be equivalent to 0.6 Gm. of carotene, i. e., 1,000,000 international units daily for a person weighing 60 Kg. Dittmar [90] reports that large doses of vitamin A decrease the percentage of successful tumor implants in mice. As the doses were from 1,000 to 2,000 rat units daily, it seems possible that he may have been dealing with a toxic effect due either to the vitamin itself or to some other substance in the concentrate. Lustig and Wachtel [91] believe that local applications of concentrates of vitamin A assist in the healing of malignant ulcers, provided radium also is used. The influence of vitamin A deficiency on the growth of tumors has been little studied, because complete deficiency is likely to be fatal before the growth of the tumors can be accurately observed. Wolbach and Howe [92] state their belief that in man defective formation of the enamel of the teeth, denticles, pulp bone and cemento-exostoses may reasonably be regarded as possibly due to vitamin A deficiency. Orten, Burn and Smith [93] produced moderate deficiency of vitamin A in rats by feeding the animals on a diet deficient in the vitamin from weaning until signs of deficiency developed, then supplementing the diet with from 0.7 to 6 international units of vitamin A daily. In those rats which survived for a year, they found quite constantly large painless odontomas of the maxillae developing from the embryonic cells of the pulp.

LOCAL TREATMENT OF BURNS, ULCERS AND INFECTIONS

The local treatment of infections, burns and fresh wounds with applications of ointments containing cod

80. Mellanby, Edward: The Experimental Production and Prevention of Degeneration in the Spinal Cord, Brain **54**: 247 (Sept.) 1931.
81. Mellanby, Edward: Lesions of the Central and Peripheral Nervous Systems Produced in Young Rabbits by Vitamin A Deficiency and a High Cereal Intake, Brain **58**: 141 (June) 1935.
82. Suzman, M. M.; Muller, G. L., and Ungley, C. C.: An Attempt to Produce Spinal Cord Degeneration in Dogs Fed a High Cereal Diet Deficient in Vitamin A: The Incidental Development of a Syndrome of Anemia, Skin Lesions, Anorexia and Changes in the Concentration of Blood Lipoids, Am. J. Physiol. **101**: 529 (Aug.) 1932.
83. Zimmerman, H. M.: Lesions of the Nervous System in Vitamin Deficiency: I. Rats on a Diet Low in Vitamin A, J. Exper. Med. **57**: 215 (Feb. 1) 1933.
84. Zimmerman, H. M., and Cowgill, G. R.: Lesions of the Nervous System in Vitamin Deficiency: IV. The Effect of Carotene in the Treatment of the Nervous Disorder in Rats Fed a Diet Low in Vitamin A, J. Nutrition **11**: 411 (May) 1936.
85. Sutton, T. S.; Setterfield, H. E., and Krauss, W. E.: Nerve Degeneration Associated with Avitaminosis A in the White Rat, Bull. 545, Ohio Agric. Exper. Sta., December 1934.
86. Aberle, S. B. D.: Neurological Disturbances in Rats Reared on Diets Deficient in Vitamin A, J. Nutrition **7**: 445 (April) 1934.
87. Bartz, J. P., and Schmitt, F. O.: Carotene and Associated Pigments in Medullated Nerve, Am. J. Physiol. **117**: 280 (Oct.) 1936.
88. Baker, Lillian E.: Effect of Vitamin A on Proliferation of Fibroblasts, Proc. Soc. Exper. Biol. & Med. **33**: 124 (Oct.) 1935.
89. Kuh, Clifford: A Study of Vitamin A in Relation to Experimental Cancer, Yale J. Biol. & Med. **5**: 123 (Dec.) 1932.
90. Dittmar, C.: Ueber den Einfluss der Kost auf das Wachstum von Impftumoren, Ztschr. f. Krebsforsch. **44**: 73, 1936.
91. Lustig, B., and Wachtel, H.: Therapeutische Versuche mit Vitamin A beim Krebs, Ztschr. f. Krebsforsch. **44**: 53 (June) 1936.
92. Wolbach, S. B., and Howe, P. R.: The Incisor Teeth of Albino Rats and Guinea Pigs in Vitamin A Deficiency and Repair, Am. J. Path. **9**: 275 (May) 1933.
93. Orten, A. U.; Burn, C. G., and Smith, A. H.: Effects of Prolonged Chronic Vitamin A Deficiency in the Rat, with Special Reference to Odontomas, Proc. Soc. Exper. Biol. & Med. **36**: 82 (Feb.) 1937.

liver oil or concentrates has been enthusiastically advocated by Löhr.[94] He ascribed his apparently successful results in part to a bactericidal influence of the preparations used, in part to a stimulation of growth of epithelium. He presented illustrative cases but no controlled observations. He later[95] described the treatment of acute and chronic osteomyelitis by means of local applications of cod liver oil ointment and plaster bandages.

Andernach and Löhr[96] advocate the injection of cod liver oil into the joint spaces in chronic arthritis of various types; a rather severe (sterile?) inflammation ensues, following which improvement occurs, probably as a result of hyperemia. Their cases, however, are not analyzed from a statistical standpoint. Several other authors have reported good results from the use of local applications of ointments containing vitamins A and D.[97] Solutions of carotene in oil have been recommended by Rachet and Busson[98] for the local treatment of ulcerative colitis. The work was not controlled by the use of oil without carotene. Balachovski[99] used colloidal carotene in salt solution for the local treatment of superficial lesions of the eye, gingivitis, chilblains, fissures and inflammations. As he states that the treatment was just as effective after the solutions had become bleached, it is not possible to attribute his results to the action of carotene.

The clinical work just reviewed seems to have been done without a preliminary experimental study of the possible factors involved. The experimental work done by other investigators throws doubt on any specific action of the vitamins contained in the preparations applied locally. Lauber and Rocholl[100] find that the base of the ointment used is effective. Lundh[101] studied the healing of wounds produced in guinea pigs, treating the wounds on one side with various ointments and permitting the wound on the other side to heal without an ointment. Cod liver oil did not promote healing; the wounds treated with yellow petrolatum healed more slowly than the wounds exposed to dry air; the wounds treated by an ointment containing 10 per cent zinc oxide or 10 per cent zinc oxide and 1 per cent halibut liver oil healed in twenty-five days. Those treated with an ointment containing 10 per cent or 25 per cent halibut liver oil healed in twenty-three days. As he gives only the average time of healing and not the times of healing for the individual animals, it is not possible to accept his conclusion that the difference is significant, much less that it is a specific effect. Finally, the differences are so small that they by no means justify the enthusiasm of the clinical reports.

94. Löhr, W.: Ueber die Lebertransalbenbehandlung (mit und ohne Gipsverband) bei frischen Verletzungen, Verbrennungen, und phlegmonösen Entzündungen, Zentralbl. f. Chir. **61**: 1686 (July 21) 1934.

95. Löhr, W.: Die Behandlung der akuten und chronischen Osteomyelitis der Röhrenknochen mit dem Lebertrangips, Deutsche med. Wchnschr. **62**: 997 (June 19) 1936.

96. Andernach, F., and Löhr, W.: Die Behandlung der chronischen Arthritis mit Lebertran injektionen ins Gelenk, Zentralbl. f. Chir. **63**: 2493 (Oct. 17) 1936.

97. Horn, Z., and Sándor, S.: Die lokale Anwendung des A-Vitamins in der Wundbehandlung, Deutsche med. Wchnschr. **60**: 1018 (July 6) 1934. Zoltan, L.: Vitamine in der Wundbehandlung, Zentralbl. f. Chir. **62**: 3031 (Dec. 21) 1935. Sándor, S.: Vitamin A in the Local Treatment of Wounds, Lancet **2**: 738 (Sept. 26) 1936.

98. Rachet, A. J., and Busson, A.: Le traitement des recto-colites ulcéreuses par la vitamine A, Paris méd. **95**: 308 (April 6) 1935.

99. Balachovski, S.: Sur la possibilité d'insuffisances locales en vitamines, considérations théoriques et application thérapeutique, Presse méd. **42**: 1404 (Sept. 8) 1934.

100. Lauber, H. J., and Rocholl, H.: Experimentelle Untersuchungen über die Einwirkung Vitaminhaltiger Salben auf die Wundheilung, Klin. Wchnschr. **14**: 1143 (Aug. 10) 1935.

101. Lundh, G.: Experimentelle Untersuchungen der Wundheilung bei Tieren mit Lebertran, Zentralbl. f. Chir. **63**: 2860 (Nov. 28) 1936.

VITAMIN A AND INFECTIONS

Severe spontaneous infections in animals with xerophthalmia were first reported by McCollum.[102] Such infections cannot be prevented by vitamin D but can be prevented by the administration of cod liver oil or of carotene in amounts sufficient to prevent the development of symptoms of deficiency of vitamin A.[103] Animals suffering from deficiency of vitamin A are more susceptible than control animals to a variety of infections artificially produced either by inoculation through the mouth or by intraperitoneal injection of cultures.[104] The loss of resistance may appear even before other symptoms of vitamin A deficiency,[105] and it may appear in animals receiving a diet considered nearly adequate, as in the experimental epidemics in mice studied by Webster and Pritchett[106] and by Pritchett.[107] The study of experimental epidemics, of obvious importance for infections in man, has demonstrated the possibility that moderate degrees of deficiency may lower resistance but that many more factors are involved than deficiency of vitamin A.[108]

The mechanism of lowered resistance to infection in vitamin A deficiency is not understood. Although poor general condition plays a role,[109] infection seems more likely to occur in animals suffering from a deficiency of vitamin A than in those with a deficiency of other vitamins. The characteristic lesion in animals with fully developed vitamin A deficiency is degeneration of specialized epithelium which is replaced by keratinizing epithelium. In the case of the respiratory tract, alterations of the mucous membranes are undoubtedly the chief cause of spontaneous infections. In case of infections following inoculation into the blood stream or peritoneal cavity, and in case of loss of resistance in moderate deficiency of vitamin A, some other mechanism must be involved. The majority of writers agree that both the normal antibodies of the serum and the power to produce antibodies are not affected by dietary

102. McCollum, E. V.: The Supplementary Dietary Relationships Among Our Natural Foodstuffs, J. A. M. A. **68**: 1379 (May 12) 1917. Drummond, J. C.: Researches on the Fat-Soluble Accessory Substance: I. Observations upon Its Nature and Properties, Biochem. J. **13**: 81 (May) 1919. Mellanby, Edward: An Experimental Investigation on Rickets, Lancet **1**: 407 (March 15) 1919. Daniels, Amy L.; Armstrong, Margaret E., and Hutton, Mary K.: Nasal Sinusitis Produced by Diets Deficient in Fat-Soluble A Vitamin, J. A. M. A. **81**: 828 (Sept. 8) 1923.

103. Green, H. N., and Mellanby, Edward: Vitamin A as an Anti-Infective Agent, Brit. M. J. **2**: 691 (Oct. 20) 1928; Carotene and Vitamin A: The Anti-Infective Action of Carotene, Brit. J. Exper. Path. **11**: 81 (April) 1930.

104. Ørskov, J., and Moltke, O.: Studien über den Infektionsmekanismus bei verschiedenen Paratyphus-Infektionen an weissen Mäusen, Ztschr. f. Immunitätsforsch. u. exper. Therap. **59**: 357 (Dec.) 1928. Ørskov, J., and Lassen, H. C. A.: Die Bedeutung der Grösse der primären Infektionsdosis bei einigen natürlichen Infektionen, Ztschr. f. Immunitätsforsch. u. exper. Therap. **67**: 137 (June) 1930. Lassen, H. C. A.: Vitamin A Deficiency and Resistance Against a Specific Infection, J. Hyg. **30**: 300 (Aug.) 1930; Experimental Studies on the Course of Paratyphoid Infections in Avitaminctic Rats, with Special Reference to Vitamin A Deficiency, Copenhagen, Levin and Munksgaard, 1931; Die Bedeutung der Vitamine für den Verlauf von Infektionen, Ztschr. f. Immunitätsforsch. u. exper. Therap. **73**: 221 (Jan.) 1931.

105. Boynton, L. C., and Bradford, W. L.: Effect of Vitamins A and D on Resistance to Infection, J. Nutrition **4**: 323 (Sept.) 1931.

106. Webster, L. T., and Pritchett, I. W.: Microbic Virulence and Host Susceptibility in Paratyphoid Enteritidis Infection of White Mice: V. The Effect of Diet on Host Resistance, J. Exper. Med. **40**: 397 (Sept.) 1924.

107. Pritchett, I. W.: Microbic Virulence and Host Susceptibility in Parathyphoid Enteritidis Infection of White Mice: XII. Effect of Diet on Host Resistance, Further Studies, J. Exper. Med. **46**: 557 (Oct.) 1927.

108. Webster, L. T.: The Role of Microbic Virulence, Dosage and Host Resistance in Determining the Spread of Bacterial Infections Among Mice: I. Pasteurella Lepiseptica and Pasteurella Aviseptica Infections, J. Exper. Med. **52**: 901 (Dec.) 1930. Topley, W. W. C.; Greenwood, M., and Wilson, J.: The Effect of Diet in Epidemic Infections in Mice, J. Path. & Bact. **34**: 163, 1931. Watson, Marion: Studies on the Influence of Diet on Resistance to Infection: I. The Effect of Various Diets on the Fertility, Growth and Survival of Mice, J. Hyg. **37**: 396 (July) 1937; Studies on the Influence of Diet on Resistance to Infection: II. The Effect of Various Diets on the Resistance of Mice to Bacterial Infection, ibid. **37**: 420 (July) 1937.

109. Arons, P., and van der Rijst, M. P. J.: The Cause of Infections Following Lack of Vitamin A, Nederl. tijdschr. v. geneesk. **76**: 5445 (Nov. 26) 1932. Harris, L. J.; Innes, J. R. M., and Griffith, A. S.: On the Pathogenesis of Avitaminosis A, Vitamin A as the Antikeratinizing Factor, Lancet **2**: 614 (Sept. 17) 1932.

deficiencies excepting in the terminal stages and that deficient animals are not more susceptible than controls to bacterial toxins.[110] The defensive response of the tissues in vitamin deficiency has not been adequately studied.

Resistance to infection in man may be decreased in cases with marked deficiency of vitamin A. Bloch[111] reported that children suffering with xerophthalmia are liable to severe infections and that, even after recovery from the deficiency, their liability to death from infection remains high for years.[112] The majority of observers agree with Bloch's conclusions that infections are frequent and severe in cases of xerophthalmia, but Spence[113] failed to observe this. Moderate degrees of vitamin A deficiency have been assumed to lower resistance to infection in man. Four methods have been used to show that vitamin A deficiency might exist in the group subject to infection and not in the control group: (1) calculation of the intake of vitamin A in the two groups, (2) analysis of the liver for vitamin A in persons dying of infection and in those dying from accident, (3) analysis of the blood for carotene and for vitamin A, and (4) the demonstration of night blindness in the group subject to severe injection. The first method is essentially that of Barenberg and Lewis,[114] of Hess, Lewis and Barenberg[115] and of Wright, Frosst, Richel and Lawrence.[116] They were unable to lessen the incidence or the severity of respiratory infection in groups of infants by administering cod liver oil, halibut liver oil or carotene. However, the infants in their control group were already receiving adequate amounts of vitamin A. It is also possible that an inadequate diet at an age earlier than that of their subjects may be of importance.[117] Analyses of the liver have been carried out by several authors,[118] who agree that low values are usual in the livers of persons dying of infections. But it must be emphasized that the stores of vitamin A are depleted during periods of underfeeding and by infection itself. Analyses of the blood for carotene and for vitamin A[119] also show a decrease during infection. In children subject to repeated respiratory infections, but not recently ill, the average level of blood carotene is lower than in other children. But the increased liability to infection which could be ascribed to low blood carotene is only about 10 per cent.[120] The recent rather intensive study of night blindness has afforded a more direct method of ascertaining the presence of moderate degrees of vitamin A deficiency. Jeghers[121] in a group of 162 medical students found fifty, or 36 per cent, whose visual adaptation to dim light was subnormal and fifty whom he regarded as certainly normal. The calculated daily intake of vitamin A in the subnormal group was 2,445 international units; in the normal group it was 5,500. The incidence of colds during the preceding year was nearly equal (2.2 per person vs. 2.1), but the duration was 7.4 days in the subnormal group and 5.4 days in the normal group. It is obvious that the differences are not very great and certainly do not justify terming vitamin A "the anti-infective vitamin." More studies of this type are essential.

Within the past few years, several authors have studied the effect of administering vitamin A on the incidence or on the course of infections. In these studies, no attempt was made to ascertain the presence or the absence of vitamin A deficiency. A favorable effect from administration of vitamin A has been claimed on the outcome in pneumonia by Donaldson and Tasker[122] and in measles by Ellison.[123] In studies which seem to have been better controlled, no favorable effect was found in pneumonia by Orenstein,[124] in measles by Mackay and her co-workers,[125] in the complications of scarlet fever by Sutliff and his co-workers,[126] or by Clausen,[127] and in pertussis by Sehestedt.[128] It was shown that the vitamin was absorbed.[127] The literature on the effect of the administration of vitamin A on the prophylaxis of illness, especially of colds, is also conflicting. Most of the reports state that the severity of colds is less in the group receiving vitamin A. Some of the reports state that the incidence of colds is also less.[129] Although the investigators attempted to secure adequate controls, it was usual to select volunteers for the experimental groups. The stated incidence of colds during a previous year was often compared with the observed incidence during the experiment. The subjective element was not always eliminated. In Cameron's study[130] this factor was recognized and her control subjects received

110. Robertson, E. C.: The Vitamins and Resistance to Infection, Medicine **13:** 123 (May) 1934. Gellhorn, Ernst, and Dunn, Joan O.: The Influence of Lack of Vitamin A in the Diet on Phagocytosis Promoting Properties of the Blood Serum, J. Nutrition **13:** 317 (March) 1937. Torrance, C. C.: The Relation Between Vitamin A Metabolism and Susceptibility to Diphtheria Toxin, Am. J. Hyg. **18:** 375 (Sept.) 1933; Further Studies on the Relation Between Vitamin A Metabolism and Susceptibility to Bacterial Toxins, ibid. **23:** 74 (Jan.) 1936. Clausen.[117]

111. Bloch, C. E.: Decline in Immunity as a Symptom Due to Deficiency in A Vitamin and in C Vitamin, Acta pædiat., Supp. 2, (Lecture, 14th Scandinavian Paediatric Congress) **7:** 61, 1928.

112. Bloch, C. E.: Effects of Deficiency in Vitamins in Infancy, Am. J. Dis. Child. **42:** 263 (Aug.) 1931.

113. Spence, J. C.: A Clinical Study of Nutritional Xerophthalmia and Night-Blindness, Acta pædiat. (Trans. Second Int'l Ped. Congress, Stockholm, Sweden) **11:** 541, 1930.

114. Barenberg, L. H., and Lewis, J. M.: Relationship of Vitamin A to Respiratory Infection in Infants, J. A. M. A. **98:** 199 (Jan. 16) 1932.

115. Hess, A. F.; Lewis, J. M., and Barenberg, L. H.: Does Our Dietary Require Vitamin A Supplement? J. A. M. A. **101:** 657 (Aug. 26) 1933.

116. Wright, H. P.; Frosst, J. B.; Richel, F., and Lawrence, M. R.: Vitamin A and the Common Cold, Canad. M. A. J. **25:** 412 (Oct.) 1931.

117. Clausen, S. W.: The Influence of Nutrition upon Resistance to Infection, Physiol. Rev. **14:** 309 (July) 1934.

118. Laqueur, E.; Wolff, L. K., and Dingemanse, E.: Ueber den Gehalt der Leber an Vitamin A (Im besonderen beim Menschen), Deutsche med. Wchnschr. **54:** 1495 (Sept. 7) 1928. Moore, T.: Vitamin A Reserves of the Human Liver in Health and Disease, with Special Reference to the Scope of Vitamin A as an Anti-Infective Agent, Lancet **2:** 669 (Sept. 24) 1932. Wolff, L. K.: On the Quantity of Vitamin A Present in the Human Liver, Lancet **2:** 617 (Sept. 17) 1932.

119. McCoord, A. B., and Clausen, S. W.: Unpublished data.

120. Clausen (footnotes 25 and 127).

121. Jeghers, Harold: The Degree and Prevalence of Vitamin A Deficiency in Adults, with a Note on Its Experimental Production in Human Beings, J. A. M. A. **109:** 756 (Sept. 4) 1937.

122. Donaldson, S., and Tasker, J.: Preliminary Notes on the Treatment of Pneumonia with Vitamin A, Proc. Transvaal Mine Medical Officers Assn. **9:** 64, Nos. 107-108 (Feb.-March) 1930.

123. Ellison, J. B.: Intensive Vitamin Therapy in Measles, Brit. M. J. **2:** 708 (Oct. 15) 1932.

124. Orenstein, A. J.: Vitamin A in Treatment of Pneumonia, South African M. J. **6:** 685 (Nov. 12) 1932.

125. Mackay, Helen M. M.; Linford, Hilda M.; Mitman, Maurice, and Wild, Mary H.: The Therapeutic Value of Vitamins A and D in Measles, Arch. Dis. Childhood **11:** 127 (June) 1936.

126. Sutliff, W. D.; Place, E. H., and Segool, S. H.: Cod Liver Oil Concentrate (Concentrated Vitamins A and D): Ineffectiveness of Large Doses in the Prophylaxis of Otitis Media Complicating Scarlet Fever, J. A. M. A. **100:** 725 (March 11) 1933.

127. Clausen, S. W.: The Exploitation of Vitamin A, New York State J. Med. **34:** 154 (Feb. 15) 1934.

128. Sehestedt, H.: Die Beziehungen zwischen der Widerstandsfähigkeit der Kinder gegen Infekte der oberen Luftwege und dem Gehalt der Nahrung an Vitamin A, Monatschr. f. Kinderh. **63:** 351, 1935.

129. Holmes, A. D.; Pigott, M. G.; Sawyer, W. A., and Comstock, L.: Vitamins Aid Reduction of Lost Time in Industry, J. Indust. & Engin. Chem. **24:** 1058 (Sept.) 1932; The Influence of Body Weight and the Administration of Cod Liver Oil on Industrial Absenteeism, J. Am. Dietet. A. **10:** 208 (Sept.) 1934; Cod Liver Oil: A Five Year Study of Its Value for Reducing Industrial Absenteeism Caused by Colds and Respiratory Diseases, Industrial Med. **5:** 359 (July) 1936. Beard, H. H.: The Prophylactic Effect of Vitamins A and D upon the Prevention of the Common Cold and Influenza, J. Am. Dietet. A. **10:** 193 (Sept.) 1934. Gardner, E. L., and Gardner, F. W.: Vitamin A and Colds, Am. J. Dis. Child. **47:** 1261 (June) 1934. Tress, E. M.: Vitamin A as a Prophylactic Against the Common "Cold" in Groups of School Children, Am. J. Digest. Dis. & Nutrition **1:** 795 (Jan.) 1935. Gudjonsson, S. V.: On the State of Health . . . of About 450 Brewery Workers and Officials, and of About 200 Soldiers: The Effect of a Daily Dose of Vitamins (Spinatin), Ztschr. f. Hyg. u. Infectionskr. **117:** 229 (July) 1935. Cameron.[130]

130. Cameron, Hazel C.: The Effect of Vitamin A upon Incidence and Severity of Colds Among Students, J. Am. Dietet. A. **11:** 189 (Sept.) 1935.

a placebo of lactose. Cameron also calculated the daily intake of vitamin A. She found that, although the incidence of colds was not decreased by adding 5,000 international units of vitamin A to a diet already containing 4,300 units, the duration was decreased. The general criticisms just raised to this type of study have been met in the report of Shibley and Spies.[131] These authors studied groups of students selected by random sampling; no subject knew to which group he belonged; the record of infections was accurate. One group received 200,000 international units of vitamin A and 4,000 units of vitamin D per week; another received, as viosterol, 400 units of vitamin D, and the third received maize oil. The seasonal incidence of colds and their severity were alike in all groups. The duration of colds was significantly shorter in those students who received vitamin A.

The evidence reviewed indicates that severe deficiency of vitamin A lowers resistance to infection in man and that the administration of vitamin A during the course of an infection probably has no beneficial effect on the outcome unless severe deficiency is present. There is evidence that moderate deficiency of vitamin A may also increase the duration or severity of respiratory infections in man; that an adequate intake of vitamin A may lessen the severity and duration of infection in persons moderately deficient. It is also evident that many other factors are of equal or greater influence on infection, and no justification exists for calling vitamin A "the anti-infective vitamin."

HYPERVITAMINOSIS: INJURIOUS EFFECTS ASCRIBED TO PREPARATIONS OF VITAMIN A

When large amounts of pure carotene in a suitable solvent are administered to animals by mouth or by injection, no harmful effects are observed,[132] although Lewis and Reti observed that the impure lipoid soluble extract of carrots is toxic. In human beings following the ingestion of large amounts of vegetables containing carotene, and also in persons suffering from certain metabolic disorders, especially diabetes, carotene may accumulate in the skin in amounts sufficient to cause a deep yellow color known as xanthosis cutis. The term "carotenemia," although frequently applied to this condition, is not an appropriate designation, for carotenoid pigments are usually present in the plasma of human blood, and in lipoid nephrosis a marked increase of the plasma carotene may exist[133] without xanthosis cutis. No harmful effects have been ascribed to hypercarotenemia, but xanthosis cutis may be mistaken for jaundice.

When large amounts of concentrated preparations of vitamin A are administered to certain animals, injurious effects are observed. It is likely that some of these effects are due to vitamin A, but satisfactory proof is lacking because pure preparations of vitamin A were not used. It has been shown that the injurious effects do not occur if the vitamin is destroyed in the preparations by oxidation or by ultraviolet irradiation. This argument is not convincing because these procedures may destroy some other toxic substance.

Drigalski[134] administered 0.5 and 1 cc. daily of a concentrate of fish liver oil ("Vogan"; 1 cc. = 40,000 rat units of vitamin A) to rats weighing 100 Gm. Their coats became rough; cachexia, catarrhal conjunctivitis, hemorrhagic rhinitis and diarrhea developed. Death occurred within five to eight days in the animals receiving the larger dose and within seven to nineteen days in those receiving the smaller dose. At autopsy Drigalski and Laubmann[135] found degeneration of the renal glomeruli and tubules, proliferation of the reticulo-endothelial cells of the spleen, absence of striations in some of the cardiac muscle fibers, degeneration of the testes, and only slight changes in the liver. Moll, Domagk and Laquer[136] report similar injuries in mice, and Fasold[137] calls attention to an elective fatty infiltration in the Kupffer cells of the liver. Collazo and Rodriguez[138] add to the symptoms exophthalmos and spontaneous fractures. The lesions of the bones suggested osteomalacia[139] but could not be prevented by large doses of vitamin D. Rossi[140] doubted the existence of "hypervitaminosis A"; but the dose of vitamin used by him was about 400 units a day for the rat, whereas the other investigators had used from 20,000 to 40,000 units a day.

The literature which deals with injurious effects following the use of cod liver oil or of relatively small amounts of concentrates is very difficult to evaluate. Hopkins[141] found that an excess of cod liver oil in the diet of rats was injurious unless "balanced" by the addition of vitamin B complex. Following this observation, the theory of vitamin balance has developed,[142] but while accepting the observations as accurate, it is obvious that one must consider not only the relative amounts of vitamins but also the relative amounts of minerals and of other substances. As a rule the basic diets have been artificial ones, unusual for the species of animals being studied. Swedish workers report that cod liver oil, even in such small doses as 0.1 cc. per kilogram daily, may cause a variety of injurious effects, especially on the heart muscle, in mice, rats, rabbits, dogs, calves, cats, pigs, and human infants.[143] Norris and Church[144] have stated that the symptoms resemble those due to deficiency of vitamin B complex and may be due to isoamylamine in the small

131. Shibley, G. S., and Spies, T. D.: The Effect of Vitamin A on the Common Cold, J. A. M. A. **103**: 2021 (Dec. 29) 1934.

132. Wells, H. G., and Hedenburg, O. F.: The Toxicity of Carotin, J. Biol. Chem. **27**: 213 (Oct.) 1916. Lewis, J. T., and Reti, L.: Sur l'hypervitaminose A et l'innocuité des fortes doses de provitamine A (Carotine cristallisé), Compt. rend. Soc. de biol. **118**: 577, 1935.

133. Clausen, S. W., and McCoord, A. B.: Unpublished data.

134. von Drigalski, W.: Ueber Schädigungen durch Vitamin A, Klin. Wchnschr. **12**: 308 (Feb. 25) 1933.

135. von Drigalski, W., and Laubmann, W.: Ueber Schädigungen durch Vitamin A, Klin. Wchnschr. **12**: 1171 (July 29) 1933.

136. Moll, T.; Domagk, G., and Laquer, F.: Ueber das Vitamin A-Kozentrat "Vogan" und seine Wertbestimmung, Klin. Wchnschr. **12**: 465 (March 25) 1933.

137. Fasold, H.: Zur Kenntnis der Lipoidanreicherungen nach grösseren Gaben an Vitamin A, Ztschr. f. d. ges. exper. Med. **94**: 35, 1934.

138. Collazo, J. A., and Rodriguez, J. S.: Hypervitaminose A: Die Symptomatologie der durch Fütterung von reinem A-vitamin an jungen Ratten hervorgerufenen Hypervitaminose A, Klin. Wchnschr. **12**: 1732 (Nov. 4) 1933; Hypervitaminose A: II. Exophthalmus und Spontanfrakturen, ibid. **12**: 1768 (Nov. 11) 1933.

139. Strauss, K.: Beobachtungen bei Hypervitaminose A, Beitr. z. path. Anat. u. z. allg. Path. **94**: 345 (Dec.) 1934.

140. Rossi, G.: Gibt es eine Vitamin A-Hypervitaminose? Ztschr. f. Vitaminforsch. **2**: 194 (July) 1933.

141. Hopkins, F. G.: The Present Position of the Vitamin Problem, Brit. M. J. **2**: 691 (Oct. 20) 1923.

142. Harris, L. J., and Moore, T.: "Hypervitaminosis" and "Vitamin Balance," Biochem. J. **23**: 1461, 1928. Harris, L. J., and Moore, T.: Hypervitaminosis and Vitamin Balance: IV. An Instance of Vitamin Balance, ibid. **23**: 1114, 1929. Stepp, W., and Schröder, H.: Ueber den Antagonismus der Vitamine und seine Bedeutung für die Vitamintherapie, Klin. Wchnschr. **15**: 548 (April 18) 1936

143. Agduhr, E.: Postnatal Development Under Different Conditions of Nutrition and Circumstances of Functioning: I. The Changes in the Heart Through the Presence of Cod Liver Oil (Oleum Jecoris Aselli) in the Food, Acta pædiat. **5**: 319, 1926; Changes in the Organism Caused by Cod Liver Oil Added to the Foods, ibid. **6**: 165, 1926. Höjer, A.: Changes in the Heart Through the Presence of Cod Liver Oil in the Food: Effect of Cod Liver Oil by Deficiency in Vitamin B, ibid. **6**: 180, 1926. Agduhr, E.: Are the So-Called A Vitamins in Cod Liver Oil the Cause of Its Toxic Effect on the Organism, and Can a Basal Diet Complete as Regards the So-Called B and C Vitamin Contents Prevent This Toxic Effect? ibid. **7**: 289, 1928; Zur Kenntnis der toxischen Nebenwirkung des Dorschlebertrans auf den Organismus, Monatschr. f. Kinderh. **47**: 97, 1930. Agduhr, E., and Stenström, N.: The Appearance of the Electrocardiogram in Heart Lesions Produced by Cod Liver Oil Treatment, Acta pædiat. **10**: 167, 1931.

144. Norris, E. R., and Church, A. E.: The Toxic Effect of Fish Liver Oils and the Action of Vitamin B, J. Biol. Chem. **89**: 437 (Nov.) 1930.

amount found in cod liver oil, but they failed to test their oil for the presence of this substance. Their view is not supported by the direct experiments of Bell, Gregory and Drummond,[145] who showed that a disturbance of growth in rats was produced by a diet containing 15 per cent of cod liver oil and could be made to disappear by an increase in the amount of vitamin B complex. The toxic substance in their cod liver oil could be extracted with hydrochloric acid but was not an amine. Turner, Meigs and Converse[146] stated that rabbits fed a grain mixture with low grade roughage have an even chance of surviving to an age of 180 days. If 0.7 Gm. of cod liver oil per kilogram is added, death will almost certainly occur between 90 and 150 days of age. If the roughage is of good quality alfalfa hay, little if any injury is produced by cod liver oil. On the other hand, calves receiving the grain mixture, poor quality roughage and skim milk do not survive unless cod liver oil (up to 0.7 Gm. per kilogram) is supplied but are injured by 2 Gm. per kilogram. Madsen and his co-workers[147] developed a synthetic diet containing cod liver oil but no hay or grain on which sheep and goats could be reared although the goats did not thrive. Rabbits and guinea pigs fed this diet did not survive. A constant symptom of failure to survive was paralysis due to degeneration of the skeletal muscles. The heart muscle was frequently involved. The substitution of a concentrate containing vitamins A and D for the cod liver oil delayed the onset and lessened the severity of the symptoms. The addition of cod liver oil (0.7 Gm. per kilogram daily) to a natural pasture diet caused death with the characteristic lesions in goats and sheep; but 0.1 Gm. of cod liver oil per kilogram daily caused no injury to animals on a normal diet. Cox and Roos[148] have repeated the experiments of Agduhr and Höjer. Although the rats in these experiments received doses of cod liver oil sixty times as large as the doses in Agduhr's experiments, Cox and Roos found no lesions in the heart. The whole question of degeneration of muscle and nervous tissue in animals consuming synthetic diets is at present the object of active study by several investigators. The questions of the presence of toxic substances and the absence of protective factors are involved. It appears at the present time that very little evidence exists that hypervitaminosis A is involved in the effect.

Occasional untoward effects have been ascribed to cod liver oil given to patients. Czerny[149] gave 80 cc. daily to tuberculous children and frequently observed the development of seborrheic dermatitis of the face and scalp. Sensitivity to cod liver oil, resulting in urticaria or eczema, has been reported in four patients by Balyeat and Bowen[150] and to halibut liver oil in two cases by Pfister.[151]

145. Bell, M. E.; Gregory, E., and Drummond, J. C.: Studies of the Alleged Toxic Action of Cod Liver Oil and Concentrates of Vitamin A, Ztschr. f. Vitaminforsch. **2**: 161 (July) 1933.

146. Turner, W. A.; Meigs, E. B., and Converse, H. T.: Toxic Effect of Cod Liver Oil in the Ration of the Rabbit and the Calf, J. Biol. Chem. (Proc. Am. Soc. Biol. Chem.) **114**: civ (May) 1936.

147. Madsen, L. L.; McCay, C. M., and Maynard, L. A.: Possible Relationship Between Cod Liver Oil and Muscular Degeneration of Herbivora Fed Synthetic Diets, Proc. Soc. Exper. Biol. & Med. **30**: 1434 (June) 1933. Madsen, L. L.; McCay, C. M.; Maynard, L. A.; Davis, G. K., and Woodward, J. C.: Synthetic Diets for Herbivora, with Special Reference to the Toxicity of Cod Liver Oil, Mem. 178, Cornell Univ. Agric. Exper. Sta., June 1935, p. 63.

148. Cox, W. M., Jr., and Roos, A. J.: On the Alleged Toxicity of Cod Liver Oil, Bull. Johns Hopkins Hosp. **54**: 430 (June) 1934.

149. Czerny, A.: Beitrag zur Lebertrantherapie, Therap. d. Gegenw. **14**: 49 (Feb.) 1912.

150. Balyeat, R. M., and Bowen, R.: Cod Liver Oil Sensitivity in Children, Am. J. Dis. Child. **47**: 529 (March) 1934.

151. Pfister, F. F.: A Skin Manifestation from the Excessive Administration of Vitamins, J. A. M. A. **102**: 533 (Feb. 17) 1934.

In view of the general favorable clinical experience with the use of cod liver oil, one would have to be very sure that the evidence for its harmful effect on human beings is strong enough to be accepted. The literature quoted in this section is so contradictory as to afford, at the present time, no adequate evidence.

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. PAUL NICHOLAS LEECH, Secretary.

ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry of the American Medical Association held its annual meeting at the Association headquarters, Friday and Saturday, March 18 and 19, 1938. Those present were Drs. David Barr, J. Howard Brown, S. W. Clausen, H. N. Cole, C. W. Edmunds, Morris Fishbein, E. M. K. Geiling, Ernest E. Irons, Paul Nicholas Leech, G. W. McCoy, E. M. Nelson, W. W. Palmer, William C. Rose and Torald Sollmann.

The following were present either for certain discussions or during the entire meeting: Dr. James S. McLester and Dr. George R. Cowgill of the Council on Foods; Dr. Austin Hayden, Secretary of the Board of Trustees; Dr. Olin West, Secretary and General Manager of the American Medical Association, and Dr. Harold Smith, Chairman of the Council on Dental Therapeutics of the American Dental Association.

Dr. Torald Sollmann was reelected chairman of the Council and Dr. W. W. Palmer was reelected vice chairman.

Among the many items discussed, the following may be of interest both to physicians and to manufacturers:

Status of Permissible Claims for Vitamins.—At the close of 1937 the Council revised the chapter in New and Nonofficial Remedies in reference to the status of permissible claims for accepted vitamin preparations. The general consensus of the Council was that there existed little need for a change in these claims but that it would be well to refer certain questions to the Cooperative Committee on Vitamins in view of recent developments in the literature. The committee was asked to report back to the Council in the near future.

Vitamin Mixtures.—The Council took cognizance of the increasing tendency on the part of pharmaceutical houses to promote mixtures of vitamins, particularly in tablet and capsule forms. The subject was referred to the Cooperative Committee on Vitamins for study and report.

Nomenclature of Vitamins.—The Council voted that New and Nonofficial Remedies 1939 be edited with a view to promoting the use of the scientific or chemical names for vitamins as promptly as possible. Eventually the name "vitamin" will be eliminated, but it will be used as a synonym during the transition period until the chemical names become fairly well established.

Advertising Claims for Vitamin Preparations.—Some recent actions of the Federal Trade Commission in the consideration of claims made for certain vitamin preparations were considered. The decisions discussed were in harmony with the views of the Council. The spirit of the Council's requirements should be enforced in passing on advertising. In other words, if a firm makes a claim that a vitamin will be of value in some phase of disease, the claim should be accompanied by a modifying clause to the effect that it applies only when there has been an exhaustion of body reserves of the vitamin and ingestion of the particular vitamin is inadequate; that is, vitamins are indicated when the condition is due to lack of vitamins themselves.

Possibility of Reducing Number of Types of Vitamin A and D Preparations.—The Council has adopted a decision limiting the dosage claims for vitamin preparations, which states that the daily dosage shall provide at least as much vitamin A and vitamin D as is contained in a teaspoonful of cod liver oil of

minimum strength, and not more than 1,000 units of vitamin D and 10,000 units of vitamin A. In applying this decision to vitamin A and D preparations, it becomes obvious that there are more classes of vitamin A and D preparations than are really necessary and the multiplicity of dosage forms also imposes an undue burden on the physician. One of the Council's referees pointed out that the number of vitamin A and D preparations should be limited by restricting the number of concentrations in each form to be recognized by the Council. The Council voted that this matter be referred to the Cooperative Committee on Vitamins for consideration and report.

Vitamin E.—Recently the use of vitamin E in the form of wheat germ oil has been suggested for the treatment of habitual abortion in women. One of the referees reviewed for the Council in detail the available evidence. It was pointed out that evidence for the effectiveness of this treatment is meager and that it is the practically unanimous opinion of nutritionists that vitamin E is widely distributed in foods and that there is no reason normally to suspect a deficiency. In most cases the amount of wheat germ oil that would be administered would be but a small fraction of the vitamin E which would be consumed in the ordinary diet. The Council referred the referee's report to the Cooperative Committee on Vitamins with the request that it be published after consideration by the committee.

Advertising Brochures.—In the printed abstract of the minutes of the Council for 1937 (THE JOURNAL, May 29, 1937, p. 1887) appeared the following paragraph:

> *Brochures Issued by Pharmaceutical Houses.*—There has recently been a tendency on the part of certain pharmaceutical firms to issue brochures advising the profession on the status of certain diseases and making recommendation for therapeutic treatment. In such brochures a certain drug is extolled, frequently to the exclusion of other therapeutic measures. The members of the Council felt that comprehensive reviews of medicine, surgery or the specialties are the function of duly qualified persons who undertake the task from altruistic motives rather than for the purpose of advocating the sale and use of particular commercial products. The members of the Council recognize the usefulness of educational brochures when prepared under proper auspices and with proper restrictions.

The general opinion of the Council was in confirmation of the foregoing statement. Members of the Council felt that teaching should be done by those persons especially qualified to do the work of teaching and that brochures are generally edited with the view of increasing the sale of the product. Therefore, the contents of brochures are frequently found to be definitely biased. The Council decided to prepare, with the aid of the editor of THE JOURNAL, a report dealing with this subject.

Liver Preparations.—It was announced that a number of commercial liver preparations have been considered by the U. S. P. Anti-Anemia Preparations Advisory Board for approval. The standards of this board and those of the Council are not the same. It was brought out that the U. S. P. Advisory Board has not published its standards. Furthermore, Council-accepted products must comply with other rules of the Council besides those dealing simply with potency. It was thought that the U. S. P. committee would probably publish its standards in the near future. A motion was adopted to the effect that the Council consider it highly desirable that both the U. S. P. Anti-Anemia Preparations Advisory Board and the Council on Pharmacy and Chemistry should arrive at common standards for liver preparations, with a view to their adoption and inclusion in New and Nonofficial Remedies.

Ergonovine.—In 1937 Eli Lilly and Company submitted to the Council a detailed and documented brief to substantiate the claim that the Council should recognize its proprietary name for the substance for which the Council had coined the nonproprietary name Ergonovine. This claim was made on the basis of the patent as evidence of prior discovery of the alkaloid. After careful consideration it was voted that the Council, so far as its rules are concerned, does not concur in the contention that Eli Lilly and Company has such prior right, either for Ergonovine or for its salts. [The Council does believe, however, that by virtue of its patent Eli Lilly and Company has a prior right to a proprietary name for a mixture of ergot alkaloids, such as is defined in the patents.]

The Pharmacopeial Convention in 1940.—There was general discussion of the pharmacopeial convention to be called for 1940, and a desire expressed that the objectionable features of the convention of 1930 as it affected the medical profession should not be repeated. The Council voted to inform the Board of Trustees of the American Medical Association of its consideration of the 1940 convention of the U. S. Pharmacopeia with the suggestion that the medical profession do its utmost to insure adequate medical representation.

Status of Insulin and Insulin Preparations.—The Council considered the status of crystalline zinc insulin. The opinion was that the product zinc insulin crystals should be accepted for inclusion in New and Nonofficial Remedies, with the condition that acceptance of otherwise acceptable brands will not become official until the product is sold on the open market.

Aminophylline.—The Council published a statement on aminophylline (THE JOURNAL, June 26, 1937, p. 2203) restricting the recognizable claims for accepted products to their use as a diuretic and mild myocardial stimulant. In view of the evidence available at that time the Council reported that it could not recognize claims which would infer usefulness in overcoming the pain of angina pectoris. One of the manufacturers referred to some evidence published at about the time the Council issued its last report. The Council considered this paper but decided that for the present no alteration should be made in the decision on permissible claims for this drug. The Council, however, will scrutinize carefully any further evidence that may be published in the scientific literature to determine whether or not the permissible claims for aminophylline may be modified.

Barbituric Acid and Its Derivatives.—The Board of Trustees has requested the Council to issue a report on barbituric acid and its derivatives in view of the widespread abuses of these drugs. The Council decided to secure the cooperation of certain individuals to aid in the preparation of a report relative to the dangers of barbituric acid and its derivatives.

Antiseptics and Germicides.—The Council authorized a study and report which may aid in determining present-day scientific interpretation of such terms as "antiseptic," "germicide," "bactericide," "fungicide," "disinfectant."

Generic Names.—In view of the recent cellophane decision the Council is of the opinion that it is correct in coining new brief, usable, nonproprietary, generic names for products protected by patents, so that when a patent expires there will already be available and in use a suitable nonproprietary name. The Council was informed at that time, however, that the cellophane decision had not yet gone before the highest court.

Acquisition of Pharmaceutical Houses by Nostrum ("Patent Medicine") Interests.—For a number of years there have been holding concerns or groups of individuals who have had financial interest or control, or both, in patent medicine concerns and ethical proprietary houses. Of late there has been a further tendency of nostrum ("patent medicine") houses to purchase, or obtain financial control of, concerns which make products for the physician. The Council decided that it should be very watchful of companies acquired by nostrum interests or closely associated financially with nostrum interests. In those instances in which the Council has information that the best interests of either the public or the medical profession are being jeopardized by a house under such control and having Council accepted products, immediate action will be taken against the firms, particularly in relation to the application of rule 11. It was recommended that this action should be included in the published minutes of the Council, and that this would constitute a general notification to the pharmaceutic industry of the Council's policy.

Series of Articles on Glandular Therapy.—The book "Glandular Physiology and Therapy," which contained the series of articles published approximately two years ago, has been a success. Since the book was issued additional work has been done indicating that new chapters are needed and some now in the book should be modified or omitted. The Council decided to sponsor another series of articles on this subject with a view to publication some time in 1939.

Therapeutic Research.—The report of the Committee on Therapeutic Research was discussed in detail; the complete report will be found under Reports of Officers (THE JOURNAL, April 30, 1938, p. 1484).

Comparative Safety of Anesthetics.—The Council directed that a communication be sent to the Council on Scientific Assembly pointing out the desirability of keeping the subject of reports on the comparative safety of anesthetics actively before the clinical sections and emphasizing that the Council is desirous of receiving any reports of accidents following the use of anesthetics.

Drug Store Window Display Advertising.—The Council voted that pharmaceutical firms again be informed that window display advertising arranged by the manufacturers comes within the category of the Council's rules dealing with advertising; that manufacturers of Council accepted products must abide by the Council's rule of not using an accepted preparation, or preparations, to advertise a nonaccepted preparation, or preparations, and that the manufacturers will be held responsible when such conflicts come to the attention of the Council.

Council on Foods

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

ANNUAL MEETING OF THE COUNCIL ON FOODS

The Council on Foods held its annual meeting at the Association headquarters on March 17, 1938. Dr. Bailey, who has served on the Council since its inception, was unable to attend because of illness. The following members were present: Drs. F. C. Bing, Joseph Brennemann, Morris Fishbein, George Cowgill, P. C. Jeans, Howard B. Lewis, J. S. McLester, Lydia J. Roberts, Mary Swartz Rose and Russell M. Wilder. Others present included Dr. Olin West, Secretary and General Manager of the American Medical Association; Dr. E. M. Nelson, Chief of the Vitamin Division, Food and Drug Administration; Dr. W. C. Woodward, Director of the Bureau of Legal Medicine; Dr. Paul Nicholas Leech, Director of the Division of Drugs, Foods and Physical Therapy, and Drs. Ruth Cowan Clouse and Majorie Pickens of the Council office.

Dr. Fishbein was reelected Chairman and Dr. Lewis was elected Vice Chairman.

The present work and future developments of the Council on Foods were discussed at some length. It has been found necessary in the last two years to limit somewhat the scope of products to be considered, because of the vast number of submissions and the limitation in facilities. As a result, several of the "natural foods" have been placed on the exempted list. The advisability of continuing consideration of sugars and homogenized milks was discussed and it was decided that, in view of the apparent necessity to moderate some of the claims which are being made for these foods, it would be well to retain them on the list of products considered and to "accept" those products which comply with the Rules and Decisions of the Council.

Ice creams, sherbets and ices were placed on the "exempted" list approximately a year and a half ago. One result of this action has been the formation of an Association of Quality Ice Cream Producers, which has established high sanitary and advertising standards for its members. The Council looks favorably on the general policy of this type of organization, and while it will not be possible to grant the use of the seal to appear on the cartons and in the advertising for the products of the member firms, as requested by the association, the Council voted to allow the members to incorporate on their cartons and in other advertising a uniform statement (without the seal) that the method of manufacture and the advertising claims are acceptable to the Council on Foods (after the Council has considered them).

A progress report on the series of articles on vitamins which is appearing currently in THE JOURNAL under joint sponsorship with the Council on Pharmacy and Chemistry was given. This series will consist of more than thirty articles and will be made available in book form as soon as all of the reviews have appeared. Opportunity will be afforded authors to bring their bibliographies up to date before the book is published.

Work on the book Accepted Foods has been progressing and it is planned to publish this volume soon.

The following additional topics which were discussed during the meeting may be of interest to physicians, manufacturers and the general public:

Vitamin D Requirements of Babies Born Prematurely.—Consideration was given to the claim made by manufacturers of infant feeding preparations containing vitamin D that the use of some of them will prevent rickets in babies born prematurely. The referee, in discussing this question, observed that rickets in premature infants is not prevented by an amount of vitamin D which is less than that required for full term infants. After the first few weeks of life the requirement of the premature infant should approach that of the full term infant. The vitamin D requirement of the prematurely born infant is not easily determined because of the difficulty of supplying ample amounts of calcium and phosphorus during the first few weeks of extra-uterine life. It is well known that it is difficult for a premature baby to ingest sufficient calcium to permit adequate retention. There is evidence that prevention of rickets in premature infants may be accomplished by administering about 70 U. S. P. units of vitamin D per kilogram of body weight. For adequate retention of calcium and phosphorus more vitamin D may be necessary. From evidence available it can be concluded that the vitamin D requirements of prematurely born infants are satisfied by from 600 to 800 U. S. P. units of vitamin D fed in dispersed form, which is approximately twice the requirement (for prevention of rickets and for growth) of the majority of full term infants. Thus, the claim that a preparation which provides approximately 70 U. S. P. units of vitamin D per kilogram is antirachitic for premature babies is acceptable, although physicians should realize that, in the light of present knowledge, somewhat more vitamin D may be desirable for adequate retention of calcium.

Vitamin D and Growth.—In its study of the vitamin D requirements of infants, the Council distinguished between the amount of vitamin D necessary to prevent rickets and the greater amount which is necessary in order to permit optimal retention of calcium and phosphorus. As far as normal, full term infants are concerned, milk containing 135 U. S. P. units per quart usually will prevent rickets. Milk containing 400 U. S. P. units of vitamin D per quart obviously supplies somewhat more than the amount which usually is required to prevent rickets. The question has been raised whether or not vitamin D milk containing 400 U. S. P. units of vitamin D per quart permits good growth. It has long been known that vitamin D is a growth factor, like many other dietary essentials. There is evidence also that infants receiving customary quantities of milk which contains 400 U. S. P. units of vitamin D per quart exhibit good growth. The Council voted that this claim be recognized.

The Nutritional Significance of Foods (Other Than Milk) Commonly Fed During the First Year of Life.—Manufacturers of cereal products commonly used in infant feeding have advanced the claim that their respective products are baby's "first solid food." This statement is a relatively harmless bit of advertising puffery, but it is not entirely correct. Milk is a "solid" food just as much as any cereal product. The chief objection to the phrase, however, is the reference to any particular product as the "first" of the foods other than milk (and carbohydrate supplements). The referee discussed the general problem of infant feeding and the necessity of supplying the infant with suitable amounts of vitamins A, B_1, C and D and with iron and the other substances which foods supply. The place of orange juice, cod liver oil, cereals, vegetables, fruits and egg yolk in the diet of the infant was discussed.

A report on this topic will be prepared for publication. The Council voted, on the basis of evidence presented, that manufacturers of ordinary cereal products be requested to modify their claims to indicate that cereal preparations are "among baby's first solid foods" or that an individual product is "one of baby's first solid foods."

Caffeine and Theobromine in Foods.—The question of whether or not beverages containing caffeine and theobromine may be used by children is a perennial one. Unfortunately, it does not seem possible to specify a maximum amount of caffeine and theobromine which may be present in a product recommended for children. The habits and customs of different people vary greatly and the problem is complex. It is generally recognized that unrestricted quantities of tea, coffee and other purine containing beverages are not desirable for children. It is likewise generally recognized that a child should drink milk. Because a child will take only a limited amount of fluid material in a day, it is important that coffee, tea and other purine containing beverages do not replace milk.

The Problem of Lead in Foods.—The Council has sponsored some investigations on the lead problem during the last year and it is planned to continue these studies and to publish reports from time to time on the status of knowledge of this question.

Emulsifying Agents in Foods.—Certain foods, processed cheese and oleomargarine in particular, contain emulsifying agents. Formerly these emulsifying agents consisted of inorganic phosphates, lecithin and other well known substances. More recently a synthetic product known as monostearyl sodium sulfoacetate and frequently described as a "derivative of glycerin" has been much used. Reports of experiments indicate that this derivative of glycerin should be digested to glycerin, stearic acid and sodium sulfoacetate, the first two of which are harmless and the third of which appears to be excreted unchanged. It is considered improbable that sodium sulfoacetate in quantities likely to be ingested would have any toxic effect, either acute or cumulative, though no direct experiments concerned with either the digestion or fate in metabolism of the "derivative of glycerin" are available. The Council voted to prepare a report providing information concerning the newer emulsifying agents with a view to publication and later incorporation in the book Accepted Foods. The Council regards the name "derivative of glycerin" as nonspecific, indefinite and somewhat misleading because it includes all fats and lecithin. The more definite chemical name sodium monostearosulfoacetate will henceforth be used by the Council in the enumeration of ingredients of oleomargarins.

Conversion Factors for Changing Sherman Units of Vitamin A into International Units, and Problems Relating Thereto.—Data regarding the vitamin A content of most food products have been reported in terms of Sherman units. These units depend on the growth response of experimental animals which is subject to variation in different laboratories and at different times in the same laboratory. The Sherman unit therefore has no fixed value. It is now generally considered that the estimation of vitamin A in terms of international (or U. S. P. units) provides a means of compensating for a number of the variables inherent in the older method. According to the international system, the unit amount of vitamin A is defined as that which is contained in a definite amount of standard substance. The vitamin A content of a food product is determined by comparing the growth response of animals receiving a substance tested with the growth response of animals simultaneously fed the standard reference material. Thus, variations in growth due to unsuspected variations in composition of diets and other factors cancel out and the international unit becomes a relatively fixed value.

In 1933 the U. S. P. Vitamin Advisory Board reported that, on the basis of evidence then available, 1 Sherman unit appeared to be equal to about 1.4 international units. This was not an official factor but was widely adopted at that time for the conversion of Sherman to international units both in the drug and food fields. From evidence which has later accumulated in various laboratories, it now appears that 1 Sherman unit may be equal to from 1.4 international units to 0.5 international unit. A factor for the conversion of one unit into another is not necessary at the present time for pharmaceutical products, because there are relatively few of these and the potency can be determined by the U. S. P. method. In calculations for nutritional purposes, however, it will be necessary for some time to come to convert one unit into another. It is not possible, and because of the nature of the problem it will not be possible, to select a single factor which is entirely satisfactory. It is the consensus of the Council, after reviewing available data, that the most probable relationship is 1 Sherman unit equals from about 0.66 to 0.80 international unit. A more detailed report is being prepared for publication. It will suffice here to give but one example of the importance of reviewing the evidence on this topic. As a standard allowance for the vitamin A requirements of an adult, various authorities have, in the past, suggested about 3,000 Sherman units. The question then arises: How many international units is this amount of vitamin A equivalent to? Because of the variability of the factors reported, this would be from 1,500 to 4,200 international units of vitamin A. The higher value, 4,200 international units, would be preferable as a standard dietary allowance but it would be well to know how liberal this amount actually is.

The Iodine Content of Iodized Salt.—In its General Decision "Iodized Salt, and Goiter an Iodine Deficiency Disease," the Council stated, "An accepted iodized salt shall contain one part sodium or potassium iodide per 5,000 parts salt (approximately 160 parts iodine per million parts salt), or iodine equivalent of any other suitable iodine compound." Latterly the opinion has been expressed by some investigators that the amount of iodine in iodized salt could well be decreased. The value of iodized salt (as defined by the Council) in the prevention of simple goiter has been demonstrated. It also is known that the ingestion of additional iodides by some persons, those with adenomatous goiter, for example, is harmful, but in reviewing available evidence there is no report that harm has come from the use of iodized salt. The Council decided, therefore, that for the present the amount of iodine in accepted brands of iodized salt should be continued at one part of sodium or potassium iodide to 5,000 parts of salt. It is planned also to prepare and publish a report on iodized salt in which these questions are discussed at greater length. The Council emphasizes that persons over 30 years of age with any swelling of the throat should not use iodized salt unless they do so under the directions of a competent physician.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

MIAMI VALLEY, DA LEE, SPRING FARM, PITCHERS BEST, AND SHADY NOOK BRANDS EVAPORATED MILK

Manufacturer.—Westerville Creamery Company, Covington, Ohio.

Description.—Canned, unsweetened evaporated milk.

Manufacture.—The raw milk is inspected, tested for butterfat content, preheated, evaporated under vacuum, homogenized, cooled, and standardized for fat and total solids content. The evaporated milk is automatically filled into cans; the cans are sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 73.9%, total solids 26.1%, ash 1.3%, fat (ether extract) 7.8%, protein (N × 6.38) 6.8%, lactose (by difference) 10.2%.

Calories.—1.4 per gram; 40 per ounce.

MRS. PALEY'S BABY FOOD—STRAINED PEAS

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned, sieved peas, slightly seasoned with salt.

Manufacture.—Selected canned peas are sieved, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 84.1%, total solids 15.9%, ash 1.2%, fat (ether extract) 0.3%, protein (N × 6.25) 4.7%, reducing sugars as dextrose—trace, sucrose 2.9%, crude fiber 0.6%, total carbohydrates other than crude fiber (by difference) 9.1%, calcium (Ca) 0.015%, phosphorus (P) 0.059%, iron (Fe) 0.001%.

Calories.—0.6 per gram; 17 per ounce.

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SATURDAY, JULY 9, 1938

THE ROENTGENOLOGIST, THE PATHOLOGIST AND THE ANESTHETIST UNDER HOSPITAL INSURANCE PLANS

One of the most significant actions taken by the House of Delegates in San Francisco concerned the relationship of three professional groups—roentgenologists, pathologists, anesthetists—to various hospital insurance plans. Several resolutions which were offered from various sections of the country were considered by the Council on Medical Education and Hospitals. The Council in its report said:

The proposers of these resolutions, the delegates from the Massachusetts Medical Society, members of the California Medical Association and others met with the Council to express their views concerning the problems that concern the practice of medicine in hospitals by radiologists, pathologists and anesthetists. These problems have been rendered more acute by the rapid extension of systems of group hospital insurance within the last few years. The Council believes that these problems are of vital concern to the medical profession; that unwise decisions at this time may lead to consequences that would be disastrous to physicians and to the public alike, and that, therefore, a serious study should be made of existing relationships between hospitals and the physicians practicing therein, especially in the departments of anesthesia, radiology, pathology and physical therapy, with a view to standardizing the relationship of these services to the hospital and, where necessary, of reaffirming the principles of ethics involved.

The Council recommends that it, jointly with the Bureau of Medical Economics, be authorized to undertake these studies and to confer with other interested agencies, in order that it may be in a position to establish ethical standards for the practice of medicine by physicians holding positions in hospitals and to prevent the exploitation of either the public or the profession. If during this study it is revealed that hospitals registered and approved by the Council are exploiting the public or the profession, such approval may be revoked.

This report of the Council on Medical Education and Hospitals was adopted by the House of Delegates of the American Medical Association. Therefore, during the coming year a suitable study will be made and recommendations no doubt will be drawn up for submission to the House of Delegates at the next annual session.

Until new recommendations are made and until the House of Delegates has adopted them, the policy of the Association in relationship to these matters remains unchanged. Should there be doubt as to the policy of the American Medical Association in this connection it is well to remember the action taken by the House of Delegates at San Francisco, which reads:

Since . . . some state and county medical societies may find it necessary to develop preferable procedures for supplying the needs where medical services are insufficient or unavailable, it is urged that these medical societies be guided in the development of these procedures by the ten principles adopted by the House of Delegates in 1934. The application of these ten principles to specific suggestions or proposals for the organization of medical services may be facilitated by utilizing the method of direct cash payments to individual members. Your committee unanimously concurs in the suggestion and recommends that the American Medical Association adopt the principle that in any place or arrangement for the provision of medical services the benefits shall be paid in cash directly to the individual member. Thus, the direct control of medical services may be avoided. Cash benefits only will not disturb or alter the relations of patients, physicians and hospitals.

Your committee has considered in detail that portion of the report of the Board of Trustees devoted to the Bureau of Medical Economics under the heading "Group Hospitalization" and also the separate statement of the Bureau of Medical Economics entitled "Group Hospitalization Insurance." Your committee commends the clarity and forcefulness of these statements and recommends that the ten principles adopted in 1934 as the policy of the American Medical Association be amplified by the addition of the following statement to Principle 4:

If for any reason it is found desirable or necessary to include special medical services such as anesthesia, radiology, pathology or medical services provided by outpatient departments, these services may be included only on the condition that specified cash payments be made by the hospitalization organization directly to the subscribers for the cost of the services.

Disapproval of the inclusion of special medical services on a service basis in hospitalization insurance contracts will then be explicit but a constructive alternative arrangement will be possible.

These actions should make clear the point of view of the American Medical Association in this regard.

Recent apparently inspired news items have asserted that "the American Medical Association and various groups within the profession oppose the hospital insurance system which protects 1,600,000 Americans." The American Medical Association has never opposed hospital insurance; several of its constituent medical societies have been responsible for the development of hospital insurance plans. The plans prevailing in Washington, D. C., St. Louis, Oakland, Calif., and the statewide plans in Alabama and North Carolina were inaugurated by medical societies. In many other localities, medical societies are participating in the operation of hospital insurance plans.

The medical profession is certainly opposed to those undesirable types of hospital insurance plans which violate state insurance laws or state laws governing medical practice, and to those plans promoted for individual gain. Most of the plans which violated state insurance laws or which were operated for personal gain have been discontinued or reorganized. However, many hospital service plans continue to ignore state medical practice acts which require persons to possess certain educational requirements and pass an examination before they can offer to diagnose illnesses or treat the sick. Hospitals and hospital insurance corporations

cannot fulfil these requirements. In most states the courts have therefore recognized that it is contrary to good public policy for a corporation to attempt to practice medicine by hiring physicians to practice medicine for the corporation. Physicians have always objected to those arrangements whereby a corporation (and most hospitals are corporations) attempts to sell the services of roentgenologists, pathologists and anesthetists in a manner which results in a profit for the corporation or places the directors of the corporation in control of the personal relations between the patient and his physician. Similar undesirable relations are created when a corporation attempts to practice any profession. Consequently, the courts have also recognized that a corporation cannot practice law or hire lawyers to practice law for it. The same holds true for dentistry. These principles are maintained to give the individual person reasonable assurance that he will receive competent services from physicians, lawyers and dentists.

The action taken by the House of Delegates in San Francisco holds that it is desirable to permit each person to receive the benefits from a hospital insurance system in cash so that he may purchase his own medical services from whatever source he may desire. When the individual himself pays for the services he receives he can be assured of adequate and satisfactory services; otherwise he can refuse to make the payment. Under the cash-to-the-insured payment arrangement, which is the long-established method used by accident and health insurance companies, the insured person receives a definite number of dollars with which he can purchase services that are satisfactory to him. He does not have to accept whatever services may be offered by the insuring organization. The rights of the patient certainly are superior to those of the hospital, the corporation or any other interest.

ACTIVE IMMUNIZATION AGAINST TETANUS

The prophylactic use of tetanus antitoxin in the production of passive immunity, while valuable, has presented certain disadvantages which have led to continued efforts to produce active and more permanent protection. The initial difficulty in the immunization of man against tetanus, according to Boyd,[1] lies in the lack of a suitable immunizing agent. Most of the recent work has been carried out with altered toxin termed anatoxin by Ramon but now more commonly known as toxoid. In spite of the many efforts in this direction, however, there is at present no fixed standard for tetanus toxoid except that adopted in France. The dose has varied but inoculation by the subcutaneous route has proved reasonably satisfactory. The duration of active immunity conferred by inoculation with toxoid has been so closely connected with preparation of the material, the size and frequency of the injection and other factors as to have varied widely in the hands of different investigators. From the Royal Army Medical College, Boyd reports direct experiences in immunization against tetanus. The first product used was tetanus toxoid-antitoxin floccules prepared along the same lines as diphtheria toxoid-antitoxin floccules. In the small group of volunteers treated the antitoxin production was negligible and in two months only a faint trace was found in four of the seven. Nine months after inoculation with the floccules, three of the volunteers were given a dose of 1 cc. of formol-toxoid. Two of these subjects tested after a month showed no less than two units of antitoxin per cubic centimeter of serum, while the third, not tested until fifty-six days after reinoculation, showed at that time between ten and twenty units. It seemed therefore that inoculation with floccules establishes a basal immunity, even though it fails to produce antitoxin in the serum.

Another group of thirteen volunteers was given a preliminary dose of 1 cc. of tetanus toxoid (formol-toxoid). From twenty-one to twenty-six days later, five were given a second dose of 1 cc. and a month thereafter samples of blood were tested for antitoxin. The titers at this time varied from 0.005 to 0.02 unit of antitoxin per cubic centimeter of serum, a concentration which cannot be regarded as adequate. The remaining eight men were given a second dose from six to seven weeks after the first and tested four weeks later with more satisfactory results. A further group was therefore treated similarly, and figures ultimately were available on thirty treated in this manner. The titer was between 0.01 and 0.1 unit of antitoxin per cubic centimeter of serum in three, from 0.1 to 1 unit in twenty-one, and 1 unit and over in six. These results are certainly much better than those obtained when the two doses were given at an interval of three weeks, and the average is far above the level believed to confer a protection against tetanus. The antitoxin titers compare favorably in fact with those from Ramon's three dose method and also from inoculation with two doses of alum precipitated toxoid, except when the latter are administered at wide intervals. Recommendations have accordingly been made to introduce this measure on a voluntary basis into the British army. The more extensive experience which will be thus obtained will doubtless provide valuable evidence of this particular procedure of active immunization.

In another interesting investigation of the subject recently published, Gold [2] administered two 0.5 cc. doses of tetanus toxoid alum precipitated, given 645 days apart to fifty adult workers. The later titration of the antitoxin titer of the serum from eleven members of this group showed considerable individual variability in the amount of antitoxin produced and lost in the course of active immunization. Similar results were obtained

1. Boyd, J. S. K.: Active Immunization Against Tetanus, J. Roy. Army M. Corps **70**: 289 (May) 1938.

2. Gold, Herman: Active Immunization Aganist Tetanus By Means of Tetanus Toxoid Alum-Precipitated Refined, J. Lab. & Clin. Med. **23**: 903 (June) 1938.

with other groups given the toxoid at different intervals and tested after different periods. It could be concluded nevertheless, this author believed, that a protective antitoxin titer of one unit or more develops in from five to fourteen days after an injection of a second dose of alum toxoid, even when the latter is given two years after the first dose. The duration of the protective level varies, however, and may disappear within ninety days or may last over two years. The antitoxin titer can be raised to a protective level by a further injection of alum toxoid. The most important question requiring further investigation, he concluded, is the determination of the actual amount of antitoxin necessary to protect against tetanus. Furthermore, if an infection occurs during an interval before the basic course of immunization is completed or within a few days after the second injection of alum toxoid when the antitoxin level of the blood has not yet reached 0.1 unit, it may be necessary to resort to passive immunization in order to insure full protection against tetanus. These are fundamental investigations. The attempt to produce active immunization to tetanus is of significant and practical importance, and the possible development of war injuries on a large scale lends an increasing importance to the prophylactic effort.

Current Comment

AWARD TO AMERICAN MEDICAL ASSOCIATION RADIO PROGRAM

The National Broadcasting Company has just issued a folder entitled NBC . . . Cum Laude, in which are listed awards to noteworthy radio programs broadcast over the National Broadcasting Company networks. The Institute for Education by Radio, at the ninth annual conference at Columbus, Ohio, heard transcriptions of more than 200 entries and made the following first awards to programs broadcast over the coast to coast networks of the National Broadcasting Company: Science in the News, produced by the University Broadcasting Council; The Story Behind the Headlines, by the American Historical Association; The NBC Home Symphony; Town Meeting of the Air, by Town Hall Inc., and Your Health, by the American Medical Association. Honorable mention was awarded to the University of Chicago Round Table and The World Is Yours (the Story of Electricity), produced by the U. S. Office of Education. All these programs were produced over networks of the National Broadcasting Company and with the cooperation of the educational divisions of that company. The inclusion of the educational radio program of the American Medical Association in an honor group selected by educational and radio experts is gratifying. This program has been broadcast for three seasons in dramatized form, and active plans are under way for a new series for the fall, winter and spring of 1938-1939. The principal need of this program now is a broader audience and more local outlets. County medical societies and auxiliaries have an opportunity to call the attention of this award of merit to the managers of local stations and to make efforts to interest such managers in the Your Health program as an exceptional sustaining educational feature for 1938-1939. A sustaining program as distinguished from a commercial program is one from which the networks and the local stations derive no revenue but which they contribute as a part of their function in broadcasting "for the public interest, convenience and necessity." The National Broadcasting Company cannot assure the broadcasting of network programs over stations not owned by the company, even though such stations have NBC network affiliations. The local outlets must be procured largely on the basis of local effort, through which local interest in the program can be developed. All principals of high schools and junior high schools should be given full information about the program. Informative folders prepared by the Bureau of Health Education will soon be available and will be sent gratis in quantities which can be put to good local use, on request.

TUBERCULOSIS STUDIES IN TENNESSEE

Today, with diminishing mortality from pulmonary tuberculosis, intensified emphasis is placed on early diagnosis. An example of the importance attached to early diagnosis is manifest in the study by Stewart and his collaborators [1] on tuberculous infection, morbidity and mortality in 468 households in Williamson County, Tenn. In addition to the individuals through whom attention was drawn to the family, 3,169 household contacts were examined by detailed history, physical examination, roentgen study and the tuberculin test. Of the household contacts under 15 years of age, a positive reaction to tuberculin was observed in a definitely higher proportion of those exposed to patients with positive sputum than in those exposed to other types or stages of tuberculosis. Except in the case of exposure to open tuberculosis, in fact, the positive reactions to tuberculin in the age groups from 5 to 14 were approximately the same as in the general school population. Evidence of infection as shown by roentgen examination was higher in those exposed to sputum positive patients before middle age than in later years. The possibilities of death from tuberculosis were considerably greater for the contacts of sputum positive patients than for the white population of Tennessee as a whole. Furthermore, the excess risk was concentrated in the younger age groups. The development of manifest tuberculosis and death from tuberculosis were both twice as frequent for those exposed to sputum positive patients as for those exposed to patients with manifest tuberculosis without positive sputum. Finally, it was found that the annual tuberculosis attack rate for the household contacts in the ten year period following exposure to open tuberculosis was slightly greater than 1 per cent a year—a rate approximately the same as noted in Philadelphia and in Cattaraugus County, N. Y.

1. Stewart, H. C.; Gass, R. S.; Gauld, R. L., and Puffer, Ruth R.: Tuberculosis Studies in Tennessee, Am. J. Hyg. **26**: 527 (Nov.) 1937.

ORGANIZATION SECTION

PROCEEDINGS OF THE SAN FRANCISCO SESSION

MINUTES OF THE EIGHTY-NINTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT SAN FRANCISCO, JUNE 13-17, 1938

(Concluded from page 64)

MINUTES OF THE SECTIONS

SECTION ON PRACTICE OF MEDICINE

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Francis G. Blake, New Haven, Conn.

In the absence of the secretary, Dr. Fred M. Smith, Iowa City, Dr. Gordon E. Hein, San Francisco, acted as secretary.

Dr. George E. Fahr, Minneapolis, read a paper on "The Treatment of Cardiac Irregularities." Discussed by Drs. William J. Kerr, San Francsico; Horace M. Korns, Iowa City; S. A. Weisman, Minneapolis; Wilhelm Dressler, Vienna (Berkeley, Calif.), and George E. Fahr, Minneapolis.

Drs. Donald E. Griggs, Charles B. Coggin and Newton G. Evans, Los Angeles, presented a paper on "Right Ventricular Hypertrophy and Congestive Failure in Chronic Pulmonary Disease." Discussed by Drs. John J. Sampson, San Francisco, and Donald E. Griggs, Los Angeles.

Dr. Walter L. Bierring, Des Moines, Iowa, delivered the Frank Billings Lecture entitled "Focal Infection—A Quarter Century Survey."

Dr. M. A. Blankenhorn, Cincinnati, read a paper on "The Present Status of the Serum Therapy of Lobar Pneumonia."

THURSDAY, JUNE 16—AFTERNOON

Dr. Albert H. Rowe, Oakland, Calif., read a paper on "Bronchial Asthma: Its Diagnosis and Treatment." Discussed by Drs. Charles H. Eyermann, St. Louis; George Piness, Los Angeles; John Francis Quinlan, San Francisco; Julian Cohn, Los Angeles, and Albert H. Rowe, Oakland, Calif.

Dr. Francis G. Blake, New Haven, Conn., read the chairman's address, entitled "A Further Evaluation of Artificial Pneumothorax in Lobar Pneumonia."

Drs. Martin H. Dawson and Ralph H. Boots, New York, presented a paper on "The Treatment of Rheumatoid Arthritis." Discussed by Drs. Ernest E. Irons, Chicago, and Russell L. Haden, Cleveland.

Dr. Bayard T. Horton, Rochester, Minn., read a paper on "The Outlook in Thrombo-Angiitis Obliterans." Discussed by Drs. F. E. Bollaert, East Moline, Ill., and Bayard T. Horton, Rochester, Minn.

Dr. Roy W. Scott, Cleveland, read a paper on "Hypertension: A Century After Bright." Discussed by Drs. T. H. Coffen, Portland, Ore.; Frank R. Nuzum, Santa Barbara, Calif., and Roy W. Scott, Cleveland.

Dr. Karl A. Menninger, Topeka, Kan., read a paper on "The Psychologic Factor in Disease." Discussed by Drs. Edgar V. Allen, Rochester, Minn.; Dwight L. Wilbur, San Francisco, and Karl A. Menninger, Topeka.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. N. C. Gilbert, Chicago; vice chairman, Dr. L. H. Briggs, San Francisco; member of the American Board of Internal Medicine, Dr. Ernest E. Irons, Chicago.

Acting Secretary Hein read a note addressed to Dr. Fred M. Smith, stating that Dr. Walter J. Barlow passed away on Sept. 4, 1937.

Drs. Daniel B. Hayden and Edward L. Chainski, Chicago, presented a paper on "Tinnitus: Etiology and Evaluation of the Various Methods of Treatment." Discussed by Drs. Willard L. Wood, Chicago (read by the secretary in his absence), and Charles E. H. Bates, San Francisco.

Dr. Francis D. Murphy, Milwaukee, read a paper on "Acute Glomerular Nephritis with Special Reference to the Course and Prognosis: A Study of 150 Cases." Discussed by Drs. Thomas Addis, San Francisco; James S. McLester, Birmingham, Ala., and Francis D. Murphy, Milwaukee.

Drs. L. H. Newburgh and Jerome W. Conn, Ann Arbor, Mich., presented a paper on "A New Interpretation of Diabetes Mellitus in Obese, Middle Aged Persons: Recovery Through Reduction of Weight: First Report." Discussed by Drs. Bertnard Smith, Los Angeles; J. W. Sherrill, La Jolla, Calif.; Frank N. Allan, Boston, and Jerome W. Conn, Ann Arbor, Mich.

Dr. Edward H. Rynearson, Rochester, Minn., read a paper on "The Treatment of Addison's Disease." Discussed by Drs. Herbert M. Evans, Berkeley, Calif., Lester J. Palmer, Seattle; Willard O. Thompson, Chicago, and Edward H. Rynearson, Rochester, Minn.

Drs. Willard O. Thompson and Norris J. Heckel, Chicago, presented a paper on "The Present Status of the Treatment of Undescended Testes." Discussed by Drs. Hans Lisser, San Francisco; E. Kost Shelton, Los Angeles, and Willard O. Thompson, Chicago.

Drs. John Russell Twiss and James H. Barnard, New York, presented a paper on "The Management of Biliary Tract Disease Associated with Disturbances in Cholesterol Metabolism: A Review of 100 Cases Treated Medically and Surgically." Discussed by Drs. Arthur L. Bloomfield, San Francisco, and John Russell Twiss, New York.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Hugh H. Trout, Roanoke, Va.

Drs. Waltman Walters and Edwin John Kepler, Rochester, Minn., presented a paper on "Surgical Lesions of the Adrenal Glands." Discussed by Drs. Howard C. Naffziger, San Francisco; Hans Lisser, San Francisco, and Waltman Walters, Rochester, Minn.

Dr. J. Eastman Sheehan, New York, read a paper on "The Use of Free Full-Thickness Skin Graft." Discussed by Drs. George W. Pierce, San Francisco; H. L. D. Kirkham, Houston, Texas, and J. Eastman Sheehan, New York.

Dr. Charles Scott Venable, San Antonio, Texas, read a paper on "Electrolysis: The Controlling Factor in the Use of Metals in Fractures." Discussed by Drs. Edgar L. Gilcreest, San Francisco; Leon O. Parker, San Francisco, and Charles Scott Venable, San Antonio, Texas.

Drs. Martin B. Tinker and Martin B. Tinker Jr., with the collaboration of Drs. A. T. Kerr and W. M. Sawdon, Ithaca,

N. Y., presented a paper on "Fracture of the Neck of the Femur." Discussed by Drs. Kellogg Speed, Chicago; Wallace I. Terry, San Francisco; Walter G. Stern, Cleveland, and Martin B. Tinker, Ithaca, N. Y.

Drs. George W. Swift and S. N. Berens, Seattle, presented a paper on "Cerebrocranial Injuries: Detailed Study of 1,433 Cases." Discussed by Drs. Harry E. Mock, Chicago, and George W. Swift, Seattle.

THURSDAY, JUNE 16—MORNING

Dr. Arthur Carroll Scott, Temple, Texas, read a paper on "Early Differential Diagnosis of Breast Tumors." Discussed by Drs. Irvin Abell, Louisville, Ky.; James F. Percy, Los Angeles, and Arthur Carroll Scott, Temple, Texas.

Dr. Hugh H. Trout, Roanoke, Va., read the chairman's address, entitled "Carcinoma of the Breast."

Dr. Howard M. Clute, Boston, read a paper on "Gastroduodenostomy for Certain Duodenal Ulcers." Discussed by Drs. Robert S. Dinsmore, Cleveland; Harold L. Thompson, Los Angeles; Moses E. Steinberg, Portland, Ore., and Howard M. Clute, Boston.

Dr. John Oscar Bower, Philadelphia, read a paper on "Routine Operations versus Scientific Management of Spreading Peritonitis Complicating Acute Perforative Appendicitis." Discussed by Drs. Harold P. Totten, Los Angeles; David A. Willis, Chicago; W. D. Haggard, Nashville, Tenn., and John Oscar Bower, Philadelphia.

Drs. Grover Cleveland Penberthy, Charles G. Johnston, R. J. Noer and J. C. Kenning, Detroit, presented a paper on "The Use of Small Intestine Decompression in the Treatment of Intestinal Obstruction." Discussed by Drs. Dwight L. Wilbur, San Francisco; Frederick A. Coller, Ann Arbor, Mich., and Charles G. Johnston, Detroit.

Drs. Fred W. Rankin, Lexington, Ky., and John Stewart Stage Combined Abdominoperineal Resection of the Rectum for Cancer." Discussed by Drs. Thomas M. Joyce, Portland, Ore.; Harvey B. Stone, Baltimore; Thomas E. Jones, Cleveland, and Fred W. Rankin, Lexington, Ky.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Henry W. Cave, New York; vice chairman, Dr. Fred W. Bailey, St. Louis; secretary, Dr. Arthur W. Allen, Boston; member of the executive committee, Dr. Hugh H. Trout, Roanoke, Va. Drs. Fred W. Rankin, Lexington, Ky., and John Stewart Rodman, Philadelphia, were appointed to succeed themselves for a period of two years as representatives of the Section on Surgery on the American Board of Surgery.

Drs. Albert O. Singleton and Truman G. Blocker Jr., Galveston, Texas, presented a paper on "The Problem of Disruption of Abdominal Wounds and Postoperative Hernia." Discussed by Drs. R. L. Sanders, Memphis, Tenn.; Alton Ochsner, New Orleans; Carl R. Steinke, Akron, Ohio; Frank K. Boland, Atlanta, Ga., and Albert O. Singleton, Galveston, Texas.

Dr. Charles Eaton Phillips, Los Angeles, read a paper on "Mediastinal Infections Due to Eosophageal Perforations." Discussed by Drs. Simon Jesberg, Los Angeles, and Charles Eaton Phillips, Los Angeles.

Dr. Claude Frank Dixon, Rochester, Minn., read a paper on "Management of Intestinal Fistulas." Discussed by Drs. Gunther W. Nagel, San Francisco; Alton Ochsner, New Orleans, and Claude Frank Dixon, Rochester, Minn.

Drs. Frederick A. Coller and Howard C. Jackson, Ann Arbor, Mich., presented a paper on "Surgical Aspects of Hypoglycemia Associated with Liver Damage." Discussed by Drs. Emile F. Holman, San Francisco; Frank N. Allan, Boston; Theodore L. Althausen, San Francisco, and Frederick A. Coller, Ann Arbor, Mich.

Drs. Amos R. Koontz and Richard T. Shackelford, Baltimore, presented a paper entitled "Does Ether Narcosis Protect from Anaphylactic Shock?" Discussed by Drs. Franklin I. Harris, San Francisco, and Amos R. Koontz, Baltimore.

SECTION ON OBSTETRICS AND GYNECOLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. E. D. Plass, Iowa City.

Drs. Eva F. Dodge, Montgomery, Ala., and Thomas T. Frost, Winston-Salem, N. C., presented a paper on "The Relation Between Blood Plasma Proteins and Toxemias of Pregnancy: A Preliminary Report." Discussed by Drs. Boyd Harden, Burlington, N. C.; Thomas Addis, San Francisco, and Eva F. Dodge, Montgomery, Ala.

Dr. Francis L. McPhail, Great Falls, Mont., read a paper on "Toxemias of Pregnancy: Cause and Treatment." Discussed by Drs. P. J. Carter, New Orleans; Lyle G. McNeile, Los Angeles, and Francis L. McPhail, Great Falls, Mont.

Dr. Frederic Schreiber, Detroit, read a paper on "Cyanosis of the Newborn and Associated Cerebral Injury." Discussed by Drs. C. B. Courville, Los Angeles; J. C. Litzenberg, Minneapolis, and Charles Edwin Galloway, Evanston, Ill.

Dr. Richard Torpin, Augusta, Ga., read a paper on "Study of Placental Site and Intra-Uterine Relationship by Original Method of Amniotic Sac Distention: Report of 400 Cases." Discussed by Drs. L. A. Calkins, Kansas City, Mo.; James R. Reinberger, Memphis, Tenn., and Richard Torpin, Augusta, Ga.

Dr. Donald J. Thorp, Seattle, read a paper on "Study of the Pelvic Joints During Pregnancy and Labor." Discussed by Drs. Alice F. Maxwell, San Francisco, and Donald J. Thorp, Seattle.

Drs. Emil Bogen and Jane Skillen, Olive View, Calif., presented a paper on "Pregnancy and Tuberculosis." Discussed by Drs. J. C. Irwin, Los Angeles, and Emil Bogen, Olive View, Calif.

The talking motion picture "The Birth of a Baby" was presented.

THURSDAY, JUNE 16—AFTERNOON

Dr. Joseph L. Baer, Chicago, read a paper on "The Cervix Uteri in Obstetrics and Gynecology." Discussed by Drs. Edward A. Schumann, Philadelphia; George W. Kosmak, New York; Goodrich C. Schauffler, Portland, Ore., and Joseph L. Baer, Chicago.

Dr. William T. Black, Memphis, Tenn., read a paper on "Consideration of Good and Bad Results in the Treatment of Chronic Cervicitis." Discussed by Drs. R. G. Craig, San Francisco; Harvey B. Matthews, Brooklyn; Channing W. Barrett, Chicago; Leo P. FitzGerald, St. Louis, and William T. Black, Memphis, Tenn.

Dr. Donald C. Collins, Los Angeles, read a paper on "The Management of Tuberculosis of the Cervix Uteri." Discussed by Drs. Ludwig A. Emge, San Francisco; Henry Schmitz, Chicago, and Donald C. Collins, Los Angeles.

Dr. Charles Edwin Galloway, Evanston, Ill., read a paper on "Color Photography of the Uterine Cervix." Discussed by Drs. J. M. Bruner, Des Moines, Iowa, and Charles Edwin Galloway, Evanston, Ill.

Drs. Virgil S. Counseller and Robert E. Bedard, Rochester, Minn., presented a paper on "Uterine Myomectomy: Analysis of Indications and Results in 500 Cases." Discussed by Drs. Frank W. Lynch, San Francisco, and Virgil S. Counseller, Rochester, Minn.

Dr. E. D. Plass, Iowa City, read the chairman's address, entitled "Undergraduate Obstetric Teaching."

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. Harvey B. Matthews, Brooklyn; vice chairman, Dr. Ludwig A. Emge, San Francisco; secretary, Dr. Norman F. Miller, Ann Arbor, Mich.; delegate, Dr. George Gray Ward, New York; alternate, Dr. J. P. Pratt, Detroit.

The secretary reported that the executive committee recommended that the Section on Obstetrics and Gynecology endorse the action of the Committee on Maternal Welfare in supporting the film "The Birth of a Baby."

On motion regularly made and seconded, it was voted that the section endorse the action of the Committee on Maternal Welfare.

The secretary read a resolution to be offered to the Council on Pharmacy and Chemistry and the Council on Physical Therapy of the American Medical Association as follows:

WHEREAS, The House of Delegates of the American Medical Association at its Annual Meeting in Atlantic City in 1937 adopted three recommendations offered by the Association's Committee to Study Contraceptive Practices and Related Problems, namely:

1. To make clear to physicians their legal rights in relation to the use of contraceptives;

2. That investigation of materials, devices and methods recommended or employed for the prevention of conception be made, and the results of such investigation be published for the information of the medical profession;

3. That the Council on Medical Education and Hospitals of the American Medical Association be requested to promote thorough instruction in our medical schools with respect to various practices pertaining to fertility and sterility, due attention being paid to their positive as well as their negative aspects; and

WHEREAS, The Section on Obstetrics and Gynecology of the American Medical Association knows of the report of progress issued by the Association during the past year following up these recommendations; be it

Resolved, That the Section on Obstetrics and Gynecology of the American Medical Association heartily endorses the adoption of these recommendations, congratulates the Association on its stand, and in view of the urgency of the situation requests early action in accordance with said recommendations.

On motion regularly made and duly seconded, it was voted to adopt the resolution.

It was voted to appoint Dr. Harvey B. Matthews, Brooklyn, delegate to the annual meeting of the New York Obstetrical Society.

Dr. Arthur H. Curtis, Chicago, read a paper on "Anatomic Factors in the Pathogenesis and Treatment of Urethrocele and Cystocele." Discussed by Drs. W. T. Dannreuther, New York; G. D. Royston, St. Louis; Joseph L. Baer, Chicago, and Arthur H. Curtis, Chicago.

Dr. Goodrich C. Schauffler, Portland, Ore., read a paper on "Practical Deductions from the Management of 225 Cases of Infection of the Immature Vagina." Discussed by Drs. C. F. Fluhmann, San Francisco; H. Close Hesseltine, Chicago; Richard Torpin, Augusta, Ga., and Goodrich C. Schauffler, Portland, Ore.

Drs. Fred L. Adair, H. Close Hesseltine and Lucile Hac, Chicago, presented a paper on "Experimental Study of Behavior of Sulfanilamide." Discussed by Drs. Herbert O. Calvery, Washington, D. C.; J. P. Pratt, Detroit, and H. Close Hesseltine, Chicago.

Drs. Henry Schmitz, Herbert E. Schmitz and John Francis Sheehan, Chicago, presented a paper on "The Action of Measured Doses of 800 Kilovolt Roentgen Rays on Carcinomas of the Uterine Cervix." Discussed by Drs. D. G. Morton, San Francisco; Robert R. Newell, San Francisco; L. H. Garland, San Francisco, and Henry Schmitz, Chicago.

SECTION ON OPHTHALMOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Parker Heath, Detroit.

Dr. Parker Heath, Detroit, read the chairman's address.

The chairman called for an executive session to consider a motion made by Dr. Edward Jackson, Denver, seconded by Dr. John Green, St. Louis, that a committee of three be appointed to consider the chairman's address. The motion was voted on and carried.

It was recommended by the executive committee that the section dedicate the volume of this section's meeting and proceedings to Dr. John E. Weeks, Portland, Ore., and Dr. Edward Jackson, Denver. The recommendation was adopted by a rising vote.

Drs. Phillips Thygeson, New York, and Polk Richards, Albuquerque, N. M., presented a paper on "The Nature of the Filtrable Agent of Trachoma." Discussed by Drs. Edwin William Schultz, Santa Clara, Calif.; Harry S. Gradle, Chicago, and Phillips Thygeson, New York.

Drs. Frederick H. Verhoeff and Merrill J. King, Boston, presented a paper on "Scleromalacia Perforans: Report of a Case in Which the Eye was Examined Microscopically." Discussed by Drs. Frederick A. Kiehle, Portland, Ore.; Samuel P. Oast, New York; Arthur J. Bedell, Albany, N. Y.; Trygve Gundersen, Boston; Lloyd Mills, Los Angeles, and Frederick H. Verhoeff, Boston.

Dr. P. J. Leinfelder, Iowa City, read a paper on "Histopathology in Amblyopia Following Tryparsamide Therapy." Discussed by Drs. Frederick C. Cordes, San Francisco; Max Fine, San Francisco; John E. Weeks, Portland, Ore.; Otis A. Sharpe, San Francisco; Frederick H. Verhoeff, Boston; Edward Jackson, Denver, and P. J. Leinfelder, Iowa City.

Dr. Fred Loe, Rosebud, S. D., read a paper on "Sulfanilamide Treatment of Trachoma." Discussed by Dr. Harry S. Gradle, Chicago.

Dr. John M. Wheeler, New York, read a paper on "Ptosis Correction by Attachment of Orbicularis Strips to Superior Rectus." Discussed by Drs. John O. McReynolds, Dallas, Texas; John E. Weeks, Portland, Ore.; Warren D. Horner, San Francisco; C. Allen Dickey, San Francisco, and John M. Wheeler, New York.

THURSDAY, JUNE 16—MORNING

The chairman called for an executive session to consider the report by Dr. Albert C. Snell, Rochester, N. Y., on Visual Standards for Licensure to Operate Motor Vehicles. The report was adopted and referred to the House of Delegates.

The executive session was terminated on motion duly seconded and carried.

Dr. Edward Jackson, Denver, read a paper on "Theory and Use of Cross Cylinders." Discussed by Drs. Charles K. Mills, Woodland, Calif.; William H. Crisp, Denver; John Green, St. Louis; Henry B. Lemere, Beverly Hills, Calif., and Edward Jackson, Denver.

Dr. Albert C. Snell, Rochester, N. Y., read a paper on "Visual Acuity: Its Relation to Form Sense and the Application of This Relationship to Medicolegal Problems." Discussed by Drs. D. F. Harbridge, Phoenix, Ariz.; Ralph O. Rychener, Memphis, Tenn.; William H. Crisp, Denver; S. Judd Beach, Portland, Maine, and Albert C. Snell, Rochester, N. Y.

Drs. John E. L. Keyes and Harry Goldblatt, Cleveland, presented a paper on "Vascular Changes in the Eyes in Experimental Hypertension." Discussed by Drs. Arthur J. Bedell, Albany, N. Y.; William L. Benedict, Rochester, Minn., and John E. L. Keyes, Cleveland.

Dr. Hermann Burian, Hanover, N. H., read a paper on "Fusional Movements: Role of Peripheral Retinal Stimuli." Discussed by Drs. Avery M. Hicks, San Francisco; Walter H. Fink, Minneapolis; Frederick H. Verhoeff, Boston; K. C. Brandenburg, Long Beach, Calif.; Otto Barkan, San Francisco, and Hermann Burian, Hanover, N. H.

Drs. Conrad Berens and Donald W. Bogart, New York, presented a paper on "Postoperative Complication of Cataract Operations." Discussed by Drs. Watson W. Gailey, Jr., Bloomington, Ill.; Joseph L. McCool, San Francisco, and Conrad Berens, New York.

FRIDAY, JUNE 17—MORNING

Executive Session

On motion duly seconded and carried, the following resolution was adopted by the section:

Resolved, That the Section on Ophthalmology records its emphatic opposition to any measures such as the proposed State Humane Pound Law which will hinder or curtail animal experimentation as conducted by those fully qualified in biology and medicine.

Dr. Albert C. Snell, Rochester, N. Y., presented the report of the Committee on Compensation and Visual Economics. The report was accepted.

Dr. William L. Benedict, Rochester, Minn., read the report of the Committee on Optics and Visual Physiology. The report was accepted and the recommendations adopted.

The report of the Committee on the Knapp Testimonal Fund was presented by Dr. Parker Heath, Detroit. The report was accepted and the committee thanked.

Dr. Derrick Vail, Cincinnati, the secretary, reported for the Committee on Awarding the Knapp Medal that no award would be made this year.

Dr. Derrick Vail, Cincinnati, read the report of the Committee on National Museum of Ophthalmic Pathology, in the absence of the chairman, Dr. James S. Friedenwald, Baltimore. The report was accepted.

The report of the Committee on the American Board of Ophthalmology was read by Dr. William H. Crisp, Denver. The report was accepted.

Dr. Georgiana Dvorak Theobald, Oak Park, Ill., read the report of the Committee on Scientific Exhibit from the section. The report was accepted and the committee thanked.

Dr. Derrick Vail, Cincinnati, reported progress for the Committee to Cooperate with the National Committee on Prevention of Blindness. He also reported that some contact with the National Society for the Prevention of Blindness and the Social Security Board has been made and that the committee wished to be continued. It was moved, duly seconded and carried, that the report be accepted and the committee continued.

Dr. Arthur J. Bedell, Albany, N. Y., reported as delegate of the section to the House of Delegates. His report was accepted with thanks.

Dr. John Green, St. Louis, read the report of the Committee on the Museum of Ophthalmic History, in the absence of the chairman, Dr. Burton Chance, Philadelphia. The report was accepted.

Dr. Clifford B. Walker, Los Angeles, read the report of the Committee on Standardization of Drugs and Instruments. The report was accepted and the committee thanked.

A vote of thanks was extended to the Committee on Visual Standards for Operating Motor Vehicles. A vote of thanks was also extended to the local committee on arrangements.

The following officers were elected: chairman, Dr. S. Judd Beach, Portland, Maine; vice chairman, Dr. Frederick C. Cordes, San Francisco; secretary, Dr. Derrick Vail, Cincinnati.

Dr. Conrad Berens, New York, was appointed to fill a vacancy on the Committee on American Board of Ophthalmology.

Dr. Georgiana Dvorak Theobald, Oak Park, Ill., was reelected to fill the vacancy of chairman of the Committee for Scientific Exhibit from the Section. Dr. Theodore E. Sanders, St. Louis, and Dr. Derrick Vail, Cincinnati, were appointed as members of the committee.

To fill a vacancy on the American Committee (Joint) on Optics and Visual Physiology, Dr. Walter B. Lancaster, Boston, was reappointed for three years.

To the Joint Committee on Orthoptics, to represent the section, the following appointments were made: Dr. Derrick Vail, Cincinnati, chairman; Everett L. Goar, Houston, Texas, and Harold Gifford, Omaha.

To the Advisory Committee of Student Health Association, Dr. William L. Benedict, Rochester, Minn., was appointed.

To the Committee on Museum of Ophthalmic History, the following were appointed: Dr. Robert Sattler, Cincinnati; Dr. Frank H. Burch, St. Paul; Dr. John B. Weeks, Portland, Ore.; Dr. F. Phinizy Calhoun, Atlanta, Ga.; Dr. Adolph O. Pfingst, Louisville, Ky.; Dr. Allen Greenwood, Boston, and Dr. Kaspar Pischel, San Francisco.

To the Committee of National Museum of Ophthalmic Pathology (Joint), Dr. Jonas S. Friedenwald, Baltimore, was appointed.

To the Committee from the Section to cooperate with the National Committee for the Prevention of Blindness, the following were appointed: Dr. William H. Luedde, St. Louis, chairman; Dr. John W. Burke, Washington, D. C., and Dr. Delaware F. Harbridge, Phoenix, Ariz.

To the Committee on Standardization of Drugs and Instruments, the following were appointed: Dr. Clifford Walker, Los Angeles (one year); Dr. Francis H. Adler, Philadelphia (two years); Dr. Jonas S. Friedenwald, Baltimore (three years); Dr. Sanford R. Gifford, Chicago (four years), and Dr. Alfred Cowan, Philadelphia (five years).

Drs. Arnold Knapp, New York, Nelson M. Black, Miami, Fla., and Walter Parker, Detroit, were appointed to constitute the Knapp Medal Award Committee.

Dr. John Green, St. Louis, read the report on the Scientific Medal, and the medal was awarded to Dr. Phillips Thygeson of New York.

At the Demonstration Session the following were shown:

Dr. Warren D. Horner, San Francisco, presented a device for removing adhesive plaster dressings.

Dr. Clifford B. Walker, Los Angeles, demonstrated a new electrical unit for separated retina work.

Dr. Otto Barkan, San Francisco, presented an operative procedure for the shallow chamber type of glaucoma.

Dr. K. C. Brandenburg, Long Beach, Calif., presented a flashing device for orthoptic training.

Dr. Walter H. Fink, Minneapolis, presented a depth perception apparatus.

Dr. Conrad Berens, New York, presented a prism scale.

Scientific Session

Dr. Trygve Gundersen, Boston, read a paper on "Vascular Obliteration for Various Types of Keratitis, with Special Reference to the Nutrition of Corneal Epithelium." Discussed by Drs. Albert D. Ruedemann, Cleveland; Charles A. Bahn, New Orleans, and Trygve Gundersen, Boston.

Dr. Theodore E. Sanders, St. Louis, read a paper on "Mixed Tumors of the Lacrimal Gland." Discussed by Drs. William L. Benedict, Rochester, Minn.; Georgiana Dvorak Theobald, Oak Park, Ill.; Howard C. Naffziger, San Francisco, and Theodore E. Sanders, St. Louis.

Dr. Harold F. Whalman, Los Angeles, read a paper on "Vernal Conjunctivitis." Discussed by Drs. M. N. Beigelman, Los Angeles; Albert N. Lemoine, Kansas City, Mo., and Harold F. Whalman, Los Angeles.

Dr. George S. Sharp, Pasadena, Calif., read a paper on Treatment of Cancer of the Eyelids." Discussed by Drs. Everett L. Goar, Houston, Texas; Dohrmann K. Pischel, San Francisco, and Otis A. Sharpe, San Francisco.

SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Gordon B. New, Rochester, Minn.

Dr. Forrest J. Pinkerton, Honolulu, Hawaii, read a paper on "Leprosy of the Upper Respiratory Tract: Discussion of Early and Moderately Advanced Cases." Discussed by Drs. R. W. Burlingame, San Francisco; Ralph Fenton, Portland, Ore., and Forrest J. Pinkerton, Honolulu, Hawaii.

Dr. Austin A. Hayden, Chicago, read a paper on "Hearing Aids from Otologists' Audiograms."

Drs. Isaac H. Jones and Vern O. Knudsen, Los Angeles, presented a paper on "What Audiometry Can Now Mean in Routine Practice."

These two papers were discussed by Drs. William P. Wherry, Omaha; Horace Newhart, Minneapolis; Harold A. Fletcher, San Francisco; Howard A. Carter, Chicago; David Higbee, San Diego, Calif.; Austin A. Hayden, Chicago, and Isaac H. Jones, Los Angeles.

Dr. Edward J. Whalen, Hartford, Conn., read a paper on "Fungous Infections of the External Ear." Discussed by Drs. William D. Gill, San Antonio, Texas; Millard F. Arbuckle, St. Louis, and Edward J. Whalen, Hartford, Conn.

Dr. Bert E. Hempstead, Rochester, Minn., read a paper on "Osteomas of Paranasal Sinuses and the Mastoid Process, with a Report of Cases." Discussed by Drs. George H. Willcutt, San Rafael, Calif.; Thomas E. Carmody, Denver, and H. B. Graham, San Francisco.

THURSDAY, JUNE 16—AFTERNOON

Dr. Gordon B. New, Rochester, Minn., read the chairman's address, entitled "Benign Tumors of the Larynx: A Study of 722 Cases."

Drs. Chevalier Jackson and Chevalier L. Jackson, Philadelphia, presented a paper on "Cancer of the Larynx." Discussed by Drs. Max Cutler, Chicago; Simon Jesberg, Los Angeles; Joseph C. Beck, Chicago, and Chevalier L. Jackson, Philadelphia.

Dr. H. Marshall Taylor, Jacksonville, Fla., read a paper on "Chilling of the Body Surfaces and Its Relationship to Aural and Sinus Infection." Discussed by Drs. Edward Cecil Sewall,

San Francisco; John J. Shea, Memphis, Tenn.; Burt R. Shurly, Detroit, and H. Marshall Taylor, Jacksonville, Fla.

Dr. E. G. Galbraith, Toledo, Ohio, read a paper on "The Clinical Significance of Recent Work on Apneumohematosis." Discussed by Drs. J. Mackenzie Brown, Los Angeles, and E. G. Galbraith, Toledo, Ohio.

Dr. Frank R. Spencer, Boulder, Colo., read a paper on "Malignant Disease of the External Ear, with a Report of Eight Cases." Discussed by Drs. H. P. Mosher, Boston; Gordon B. New, Rochester, Minn.; Thomas E. Carmody, Denver, and Frank R. Spencer, Boulder, Colo.

Drs. Frank B. Kistner and Thomas D. Robertson, Portland, Ore., presented a paper on "Benign Granuloma of the Nose (So-Called Sarcoid): Report of a Case." Discussed by Drs. Matthew N. Hosmer, San Francisco, and Frederick T. Hill, Waterville, Maine.

FRIDAY, JUNE 17—AFTERNOON

Dr. Horace Newhart, Minneapolis, presented a portable booth for use in hearing tests and an audiometer.

Dr. Joseph C. Beck, Chicago, reported for the American Board on Otolaryngology that sixty-five men had taken the examination in this city.

In the absence of Dr. Chevalier Jackson, Dr. LeRoy A. Schall, Boston, read the report of the Committee on Lye Legislation, which was accepted.

The following officers were elected: chairman, Dr. H. Marshall Taylor, Jacksonville, Fla.; vice chairman, Dr. Harold A. Fletcher, San Francisco; secretary, Dr. LeRoy A. Schall, Boston.

Dr. William J. Mellinger, Santa Barbara, Calif., read a paper on "The Petrous Apex of the Temporal Bone and Its Relations." Discussed by Drs. J. Parsons Schaeffer, Philadelphia; Olof Larsell, Portland, Ore.; Henry J. Profant, Santa Barbara, Calif.; Louis K. Guggenheim, Los Angeles; Joseph C. Beck, Chicago, and William J. Mellinger, Santa Barbara, Calif.

Drs. Durwin H. Brownell and I. Jerome Hauser, Ann Arbor, Mich., presented a paper on "Malignancy of the Nasopharynx." Discussed by Drs. Joseph C. Beck, Chicago; John H. Childrey, San Francisco; Robert F. Ridpath, Philadelphia; James F. Percy, Los Angeles; Barney M. Kully, Los Angeles, and I. Jerome Hauser, Ann Arbor, Mich.

Dr. Herman Z. Semenov, Los Angeles, read a paper on "Surgical Pathology of Sinusitis." Discussed by Drs. Roy F. Nelson, Oakland, Calif.; Raymond O. Dart, San Francisco, and Herman Z. Semenov, Los Angeles.

Dr. David R. Higbee, San Diego, Calif., read a paper on "Cerebrospinal Rhinorrhea, with a Report of a Case Cured by Operation." Discussed by Drs. Howard C. Naffziger, San Francisco; Arthur C. Jones, Boise, Idaho, and David R. Higbee, San Diego, Calif.

Dr. C. Coulter Charlton, Atlantic City, N. J., read a paper on "Atrophic Rhinitis and Ozena at the Seashore: Further Observations." Discussed by Drs. Frank B. Kistner, Portland, Ore.; Robert F. Ridpath, Philadelphia, and C. Coulter Charlton, Atlantic City, N. J.

SECTION ON PEDIATRICS

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:10 by the chairman, Dr. Clifford Sweet, Oakland, Calif.

Dr. Clifford Sweet, Oakland, Calif., read the chairman's address, entitled "Opportunities in Pediatric Practice."

Dr. Oswald H. Robertson, Chicago, read a paper on "Recent Studies on Experimental Lobar Pneumonia: Pathogenesis, Recovery and Immunity."

Dr. James A. Conner, Chicago, read a paper on "Treatment of Pertussis." Discussed by Drs. John M. Frawley, Fresno, Calif.; John J. Miller Jr., San Francisco; W. Ambrose McGee, Richmond, Va., and James A. Conner, Chicago.

Drs. Perrin H. Long and Eleanor A. Bliss, Baltimore, presented a paper on "Further Observations on the Mode of Action, the Clinical Use and the Toxic Manifestations of Sulfanilamide." Discussed by Drs. Francis Scott Smyth, San Francisco; Thomas B. Cooley, Detroit, and Perrin H. Long, Baltimore.

Dr. Henry F. Helmholz, Rochester, Minn., read a paper on "Diagnosis and Treatment of Urinary Infections." Discussed by Dr. William P. Herbst, Washington, D. C.

Dr. Bret Ratner, New York, read a paper on "Onset and Natural Progress of Allergy in Childhood." Discussed by Drs. Milton B. Cohen, Cleveland, and Tell Nelson, Evanston, Ill.

THURSDAY, JUNE 16—MORNING

A joint meeting was held with the Section on Radiology.

Dr. W. Walter Wasson, Denver, read a paper on "Nasal Accessory Sinus Disease: Its Beginning and Progress as Portrayed by the Roentgen Ray."

Dr. Edward Clay Mitchell, Memphis, Tenn., read a paper on "Sinus Treatment in Children."

Dr. Sidney N. Parkinson, Oakland, Calif., read a paper on "Ephedrine in a Physiologic Vehicle and Lateral Head-Low Posture in Treatment of the Nose and Sinuses."

These three papers were discussed by Drs. Thomas E. Carmody, Denver; John J. Shea, Memphis, Tenn.; Roy F. Nelson, Oakland, Calif.; Edward C. Sewall, San Francisco; Eric Ogden, Berkeley, Calif.; Clifford Sweet, Oakland, Calif.; W. Walter Wasson, Denver, and Sidney N. Parkinson, Oakland, Calif.

Drs. A. Graeme Mitchell and Josef Warkany, Cincinnati, presented a paper on "The Thymus Problem in Children."

Dr. Clyde K. Hasley, Detroit, read a paper on "Radiology's Responsibility in the Diagnosis and Treatment of Thymic Hyperplasia."

Drs. L. G. Rowntree and N. H. Einhorn, Philadelphia, presented a paper on "Experimental Phases of the Thymus Problem."

These three papers were discussed by Drs. W. Edward Chamberlain, Philadelphia; Edith Boyd, Minneapolis; Randolph G. Flood, San Francisco; Herbert E. Coe, Seattle; Henry F. Helmholz, Rochester, Minn., and Clyde K. Hasley, Detroit.

The chairman appointed, as a resolutions committee, Drs. E. J. Barnett, Spokane, Wash., chairman, and E. Earl Moody, Los Angeles.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Edward Clay Mitchell, Memphis, Tenn.; vice chairman, Dr. Jean V. Cook, St. Louis, Mo.; secretary, Dr. Albert D. Kaiser, Rochester, N. Y.; delegate, Dr. William Weston, Columbia, S. C.; alternate, Dr. A. Graeme Mitchell, Cincinnati; representative to Scientific Exhibit, Dr. Arthur F. Abt, Chicago.

Dr. Horton R. Casparis, Nashville, Tenn., presented the report of the executive committee as follows:

Dr. Hugh L. Dwyer, Kansas City, Mo., reported to the executive committee that the amount at present in the Abraham Jacobi Memorial Fund is $7,476.68; that from year to year the income from the fund has been used to help defray the expenses of guest speakers; that until recently members were called on to augment this fund by donating to it but that during the past year or two this was not done, and temporarily it is recommended that the policy be continued.

The executive committee recommended that Dr. Hugh L. Dwyer, Kansas City, Mo., be elected secretary-treasurer of the Abraham Jacobi fund for the next year.

On motion by Dr. William Weston, Columbia, S. C., duly seconded, Dr. Dwyer was elected for one year secretary-treasurer of the Abraham Jacobi Fund.

Dr. E. J. Barnett, Spokane, Wash., chairman of the resolutions committee, presented the report of that committee, as follows:

WHEREAS, The Section on Pediatrics of the American Medical Association has enjoyed an excellently arranged meeting through the efforts of the San Francisco pediatricians; and,

WHEREAS, The local pediatricians have also been royal hosts; and,

WHEREAS, Each member of the section feels it is a privilege to have attended this meeting of 1938 and looks forward to an early return to this hospitable, friendly city; therefore, be it

Resolved, That the Section on Pediatrics here assembled extend its thanks and appreciation to our friends, the pediatricians of San Francisco.

E. J. BARNETT.
E. EARL MOODY.

On motion of Dr. William Weston, Columbia, S. C., duly seconded, the report was unanimously adopted.

Dr. Henry F. Helmholz, Rochester, Minn., reported that he had extended the invitation of the section to the International Congress in Rome last fall; that the next International Congress will meet in Boston, Sept. 9, 10 and 11, 1940, and urged all who could to attend.

Dr. William Weston, Columbia, S. C., delegate to the House, addressed the section.

It was suggested by the chairman that the matter of program for next year be left to the executive committee and the secretary, with the understanding that if it seems feasible to work out a suitable panel discussion next year the section has no objection to it.

Drs. Julian D. Boyd and Robert L. Jackson, Iowa City, presented a paper on "Levels of Control in the Treatment of Diabetes Mellitus." Discussed by Drs. Percival A. Gray Jr., Santa Barbara, Calif.; Leona M. Bayer, San Francisco, and Julian D. Boyd, Iowa City.

Dr. Mandel L. Spivek, Chicago, read a paper on "A Consideration of Present Day Newborn Nursery Practice and Suggestions for Improvement." Discussed by Drs. Ernest Wolff, San Francisco; L. Howard Smith, Portland, Ore.; Maurice L. Blatt, Chicago; M. K. Wylder, Albuquerque, N. M.; Irving J. Wolman, Philadelphia, and Mandel L. Spivek, Chicago.

Dr. Horton R. Casparis, Nashville, Tenn., read a paper on "Should the Tuberculosis Problem in Children be the Responsibility of the Health Officer or the Pediatrician?" Discussed by Drs. V. W. Spickard, Seattle; M. K. Wylder, Albuquerque, N. M.; Henry F. Helmholz, Rochester, Minn.; Ernest Wolff, San Francisco, and Horton R. Casparis, Nashville.

Dr. W. Ambrose McGee, Richmond, Va., read a paper on "Allergy of Childhood: Prophylaxis, Early Recognition and Treatment." Discussed by Drs. George Piness, Los Angeles; Margaret M. Nicholson, Washington, D. C.; Julian Cohn, Los Angeles, and W. Ambrose McGee, Richmond.

Dr. Katsuji Kato, Chicago, read a paper on "Hematologic Indexes in Normal and Anemic Infants and Children: A Triaxial Graphic Method." Discussed by Drs. Russell L. Haden, Cleveland, and Katsuji Kato, Chicago.

Dr. Orville E. Barbour, Peoria, Ill., read a paper on "Certain Therapeutic Effects of Whole Adrenal Gland by Mouth." Discussed by Drs. E. Kost Shelton, Los Angeles; Hans Lisser, San Francisco; Mandel L. Spivek, Chicago, and Orville E. Barbour, Peoria.

SECTION ON PHARMACOLOGY AND THERAPEUTICS

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:05 by the chairman, Dr. Russell L. Haden, Cleveland.

Dr. Samuel S. Altshuler, Detroit, read a paper on "The Use of Crystalline Insulin in the Treatment of Patients with Severe Diabetes."

Drs. Percival Allen Gray Jr., Fritz Emil Bischoff and W. D. Sansum, Santa Barbara, Calif., presented a paper on "Histone Insulin and Allied Insulin Compounds."

These two papers were discussed by Drs. H. Clare Shepardson, San Francisco; Roger Holcomb, Portland, Ore.; A. A. Herold, Shreveport, La.; Lester J. Palmer, Seattle; Samuel S. Altshuler, Detroit, and Percival Allen Gray Jr., Santa Barbara, Calif.

A motion was carried to send a message of regret to Dr. Irving S. Wright, New York, secretary, ill for the past two months. Dr. Erwin E. Nelson, New Orleans, vice chairman, acted in his stead.

Drs. Tom Douglas Spies and William B. Bean, Cincinnati, and Robert E. Stone, Birmingham, Ala., presented a paper on "The Treatment of Pellagra by Means of Nicotinic Acid." Discussed by Drs. Thomas T. Mackie, New York; Julian M. Ruffin, Durham, N. C.; Mohammed Abdo Abbasy, Cairo, Egypt; J. N. Baker, Montgomery, Ala.; James E. Paullin, Atlanta, Ga.; A. J. Carlson, Chicago; P. J. Hanzlik, San Francisco; William De Kleine, American Red Cross, and Tom Douglas Spies, Cincinnati.

Dr. Gordon A. Alles, Los Angeles, read a paper on "Drugs Acting on the Autonomic Nervous System: Phenyl and Substituted Phenyl Alkylamines." Discussed by Drs. Clinton H. Thienes, Los Angeles; M. H. Nathanson, Los Angeles; P. J. Hanzlik, San Francisco, and Gordon A. Alles, Los Angeles.

Dr. M. L. Tainter, San Francisco, read a paper on "The Choice of a Sympathetic Stimulant for Treating Abnormal Circulatory States." Discussed by Drs. David A. Rytand, San Francisco; E. Geiger, Budapest Hungary; Gordon A. Alles, Los Angeles, and M. H. Nathanson, Los Angeles.

Drs. George P. Robb and Israel Steinberg, New York, presented a paper on "Visualization of the Pulmonary Circulation in Man by Means of Peripheral Intravenous Injection." Discussed by Drs. Edgar V. Allen, Rochester, Minn., and George P. Robb, New York.

THURSDAY, JUNE 16—MORNING

Dr. Russell L. Haden, Cleveland, read the chairman's address, entitled "Historical Aspects of the Use of Iron and Liver in the Treatment of Anemia."

The following papers were read as a symposium on "Blood Dyscrasias":

Dr. Edwin E. Osgood, Portland, Ore.: "The Culture of Human Marrow as an Aid in the Evaluation of Therapeutic Agents."

Dr. Harold W. Jones, Philadelphia: "The Treatment of Pathologic Hemorrhage."

Dr. Nathan Rosenthal, New York: "The Treatment of Thrombocytopenic Purpura Haemorrhagica."

Dr. William P. Murphy, Boston: "The Treatment of Pernicious Anemia."

Drs. W. M. Fowler and Adelaide P. Barer, Iowa City: "The Treatment of Iron Deficiency Anemias."

These five papers were discussed by Drs. L. W. Diggs, Memphis, Tenn.; F. W. Madison, Milwaukee; Frank J. Heck, Rochester, Minn.; Frank Nuzum, Santa Barbara; Edwin E. Osgood, Portland, Ore.; Harold W. Jones, Philadelphia; Nathan Rosenthal, New York; William P. Murphy, Boston, and W. M. Fowler, Iowa City.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Erwin E. Nelson, New Orleans; vice chairman, Dr. Irving S. Wright, New York; secretary, Dr. Edgar V. Allen, Rochester, Minn.; council: Drs. Cary Eggleston, New York, and Russell L. Haden, Cleveland.

Dr. M. Herbert Barker, Chicago, read a paper on "Sodium Chloride Tolerance in Chronic Nephritis, with Some Observations on Potassium and Sulfate Ions." Discussed by Drs. Thomas Addis, San Francisco; William Dock, San Francisco; A. A. Herold, Shreveport, La., and M. Herbert Barker, Chicago.

Dr. Herbert O. Calvery, Washington, D. C., read a paper on "Chronic Effects of Ingested Lead and Arsenic." Discussed by Drs. Floyd DeEds, San Francisco; Erwin E. Nelson, New Orleans, and P. J. Hanzlik, San Francisco.

Drs. S. R. Mettier and Chauncey D. Leake, San Francisco, presented a paper on "The Evaluation of Drugs Commonly Employed as Diagnostic Aids in Clinical Medicine." Discussed by Drs. Frank R. Nuzum, Santa Barbara, Calif., and Russell L. Haden, Cleveland.

Dr. Norman H. Plummer, New York, read a paper on "The Use of Serum in the Higher Types of Pneumonia." Discussed by Drs. Edward L. Bortz, Philadelphia; Byron F. Francis, Seattle; Philip G. Corliss, Somerton, Ariz.; William C. Bruff, Whittier, Calif., and Norman H. Plummer, New York.

Dr. F. M. Pottenger Sr., Monrovia, Calif., read a paper on "The Use of Adrenal Hormones in the Treatment of Asthenia, Asthma and Tuberculosis." No discussion.

Drs. E. G. Bannick, A. E. Brown and F. P. Foster, Rochester, Minn., presented a paper entitled "Further Clinical Observations on Therapeutic Effectiveness and Toxicity of Sulfanilamide and Several Related Compounds." Discussed by Drs. Dwight L. Wilbur, San Francisco; Edwin E. Osgood, Portland, Ore.; Russell L. Haden, Cleveland, and E. G. Bannick, Rochester, Minn.

SECTION ON PATHOLOGY AND PHYSIOLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2:05 by the chairman, Dr. Roy R. Kracke, Emery University, Ga.

The "Report on the Council on Medical Education and Hospitals to the House of Delegates of the American Medical Association" was read by the chairman.

The following applicants for Associate Fellowship were nominated: Benjamin J. Clawson, M.D., Minneapolis; Joseph Erlanger, M.D., St. Louis; John P. Quigley, M.D., Cleveland; William C. Rose, Ph.D., Urbana, Ill.

A nominating committee was appointed, consisting of Drs. F. H. Lamb, Davenport, Iowa, chairman; Thomas B. Magath, Rochester, Minn., and Alvin G. Foord, Pasadena, Calif.

Dr. R. A. Bartholomew, Atlanta, Ga., read a paper on "Pathology of the Placenta, with Particular Reference to Infarcts and Their Relation to the Toxemias of Pregnancy." Discussed by Drs. A. J. Carlson, Chicago; Roy R. Kracke, Emory University, Ga.; Frank W. Hartman, Detroit, and R. A. Bartholomew, Atlanta, Ga.

Dr. Edwin F. Hirsch, Chicago, read a paper on "Arterial Occlusions with Aseptic Necrosis of Bones." No discussion.

Dr. H. E. Robertson, Rochester, Minn., read a paper on "The Etiology and Pathogenesis of Alcoholic Cirrhosis of the Liver." Discussed by Drs. Ernest M. Hall, Los Angeles; Frank R. Menne, Portland, Ore.; A. J. Carlson, Chicago, and Charles L. Connor, San Francisco.

Dr. Meyer Bodansky, Galveston, Texas, read a paper on "Regulation of the Serum Calcium Level During Pregnancy." No discussion.

Drs. Frank W. Hartman and Victor Schelling, Detroit, presented a paper entitled "Studies on Hexyl Chloro-m-Cresol and Other Carbocyclic Antiseptics." No discussion.

Dr. Samuel M. Feinberg, Chicago, and O. C. Durham, North Chicago, Ill., presented a paper on "Annual Variations in Seasonal Aspects of Mold Allergy: A Clinical and Atmospheric Study of Over Three Years." Discussed by Drs. J. H. Black, Dallas, Texas, and F. W. Wittich, Minneapolis, and O. C. Durham, North Chicago, Ill.

THURSDAY, JUNE 16—AFTERNOON

Dr. Roy R. Kracke, Emory University, Ga., read the chairman's address, entitled "Relation of Drug Therapy to Neutropenic States."

The following papers were read as a symposium on "Blood Dyscrasias":

Drs. E. M. Butt and A. M. Hoffman, Los Angeles: "Agranulocytosis Produced Experimentally in Dogs by the Feeding of Aminopyrine." No discussion.

Drs. Frank J. Heck and Byron E. Hall, Rochester, Minn.: "Leukemoid Reactions." Discussed by Drs. Harry A. Wyckoff, San Francisco; Nathan Rosenthal, New York, and Frank J. Heck, Rochester, Minn.

Dr. Joseph M. Hill, Dallas, Texas: "Red Cell Dimensions in Familial Hemolytic Anemia with Particular Reference to Atypical Cases." Discussed by Drs. Russell L. Haden, Cleveland; M. C. Riddle, Portland, Ore., and Joseph M. Hill, Dallas.

Dr. L. W. Diggs, Memphis, Tenn.: "The Erythrocyte in Sickle Cell Anemia." Discussed by Drs. Edwin E. Osgood, Portland, Ore., and L. W. Diggs, Memphis, Tenn.

Dr. Israel Davidsohn, Chicago: "A Method of Differentiation of Blood Groups A_1 and A_2." Discussed by Drs. Harry Rosenthal, New York; Alvin G. Foord, Los Angeles, and Israel Davidsohn, Chicago.

Dr. James B. McNaught, San Francisco: "The Gordon Test for Hodgkin's Disease: A Reaction to Eosinophils." No discussion.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. Maurice B. Visscher, Minneapolis; vice chairman, Dr. Frank W. Hartman, Detroit; secretary, Dr. J. J. Moore, Chicago; delegate, Dr. L. W. Larson, Bismarck, N. D.; alternate, Dr. J. J. Moore, Chicago; nominee to American Board of Pathology, Dr. Howard T. Karsner, Cleveland.

Dr. Philip B. Matz, Washington, D. C., read a paper on "Incidence of Primary Bronchiogenic Carcinoma." Discussed by Dr. Max Cutler, Chicago.

Drs. Alvin G. Foord and Paul A. Ferrier, Pasadena, Calif., presented a paper on "Primary Carcinoma of the Ureter." No discussion.

Drs. Harry C. Schmeisser and W. A. D. Anderson, Memphis, Tenn., presented a paper on "Solid Ovarian Tumors." Discussed by Drs. Alvin G. Foord, Pasadena, Calif.; Alfred S. Giordano, South Bend, Ind.; Elmer W. Smith, San Francisco, and Harry C. Schmeisser, Memphis, Tenn.

Dr. Robert C. Page, Tuckahoe, N. Y., read a paper on "Cytology of the Skin of Mice During Application of Carcinogenic Agents, Methylcholanthrene and Cholanthrene." Discussed by Drs. Philip B. Matz, Washington, D. C., and Robert C. Page, Tuckahoe, N. Y.

Drs. Henry C. Sweany and Rosalind Klaas, Chicago, presented a paper on "X-Ray Diffraction Analysis as Applied in Pneumoconiosis." No discussion.

Drs. Harry J. Corper and Maurice L. Cohn, Denver, presented a paper on "The Effects of Tuberculoprotein: A Quantitative Study." No discussion.

SECTION ON NERVOUS AND MENTAL DISEASES

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:15 by the chairman, Dr. Samuel D. Ingham, Los Angeles.

The following resolution was presented to the section by Dr. Tom B. Throckmorton, Des Moines, Iowa, as coming from Dr. Foster Kennedy, New York:

WHEREAS, State and federal legislation governing the control of reproduction is conflicting and renders certain phases of medical practice illegal, it is important that the profession of medicine as a whole should clarify and lead in these questions involving medical practice and procedures. The importance of such control in medical practice where such control constitutes a therapeutic measure is obvious to enlightened lay opinion throughout the civilized world and should be obvious to all medical men not medievally minded; therefore be it

Resolved, That we hereby recommend the alteration of existing laws wherever necessary, so that physicians may legally give contraceptive information to their patients; and be it further

Resolved, That we recommend an amendment to sections 211, 245, 311 and 312 of the Federal Penal Code as follows: "Standard medical and scientific journals and reprints therefrom and standard medical works which contain information regarding the prevention of conception are *not* nonmailable under this section"; and be it further

Resolved, That a full and frank discussion be given in regard to these subjects by a proper deliberative council of the American Medical Association.

On motion regularly made and seconded, the foregoing resolution was approved, to be transmitted to the House of Delegates.

Drs. L. H. Ziegler, Wauwatosa, Wis., and C. P. Sheldon, Boston, presented a paper on "Marriage Among the Mentally Retarded." Discussed by Drs. Dwight L. Wilbur, San Francisco; Lawrence Kolb, Lexington, Ky.; Fred O. Butler, Eldridge, Calif., and L. H. Ziegler, Wauwatosa, Wis.

Dr. Robert P. Knight, Topeka, Kan., read a paper on "The Psychoanalytic Treatment of Chronic Alcoholic Addiction in a Sanatorium." Discussed by Drs. F. G. Ebaugh, Denver; Karl A. Menninger, Topeka, Kan.; Edward J. Mayer, Pittsburgh; Herman S. Major, Kansas City, Mo., and Robert P. Knight, Topeka, Kan.

Dr. Samuel D. Ingham, Los Angeles, read the chairman's address, entitled "Some Neurologic Aspects of Psychiatry."

Dr. Richard M. Brickner, New York, read a paper on "A Follow-Up Report of a Human Being with Bilateral Frontal Lobectomy: Comparison with Cases of Unilateral Lobectomy." Discussed by Drs. W. F. Schaller, San Francisco; J. M. Nielsen, Los Angeles; Walter Freeman, Washington, D. C.; L. H. Ziegler, Wauwatosa, Wis., and Richard M. Brickner, New York.

Dr. Hans H. F. Reese, Madison, Wis., read a paper on "Clinical Observations and Results with Hypoglycemia and Convulsive Therapy in Schizophrenia."

Drs. Richard H. Young and G. Alexander Young, Omaha, presented a paper on "Treatment of the Psychoses with Hypoglycemia and Induced Convulsions."

These two papers were discussed by Drs. A. A. Low, Chicago; Titus H. Harris, Galveston, Texas; A. E. Bennett, Omaha; Emerick Friedman, Greenwich, Conn.; George W. Hall, Chicago; Eugene Ziskind, Los Angeles; Harold E. Himwich, Albany, N. Y., and Hans H. F. Reese, Madison, Wis.

THURSDAY, JUNE 16—MORNING

Drs. Olof Larsell and Robert S. Dow, Portland, Ore., presented a paper on "The Cerebellum: A New Interpretation." Discussed by Drs. Frederick L. Reichert, San Francisco; Webb E. Haymaker, San Francisco, and Olof Larsell, Portland, Ore.

Dr. K. G. McKenzie, Toronto, Canada, read a paper on "The Present Status of a Patient Who Has Had the Right Cerebral Hemisphere Removed." Discussed by Drs. Max M. Peet, Ann Arbor, Mich.; Henry R. Viets, Boston; Richard M. Brickner, New York; Paul C. Bucy, Chicago; Walter Freeman, Washington, D. C.; A. L. Skoog, Kansas City, Mo., and K. G. McKenzie, Toronto, Canada.

Dr. W. J. Gardner, Cleveland, read a paper on "Cerebral Pseudo-Tumor and Pseudo-Abscess." Discussed by Drs. Harry Wilkins, Oklahoma City; R. B. Raney, Los Angeles; Max M. Peet, Ann Arbor, Mich.; J. M. Nielson, Los Angeles; George W. Hall, Chicago; O. W. Jones Jr., San Francisco, and W. J. Gardner, Cleveland.

Dr. R. E. Semmes, Memphis, Tenn., read a paper on "Intracranial Arteriovenous Varices with Brief Report of Ten Cases of Different Types and Special Reference to Treatment by Ligation." Discussed by Drs. Hale A. Haven, Seattle; E. B. Towne, San Francisco, and R. E. Semmes, Memphis, Tenn.

Drs. W. McK. Craig and J. W. Kernohan, Rochester, Minn., presented a paper on "Tumors of the Fourth Ventricle."

Drs. D. N. Buchanan and Percival Bailey, Chicago, presented a paper on "Brain Tumors in Infancy and Childhood."

These two papers were discussed by Drs. F. R. Teachenor, Kansas City, Mo.; Delbert H. Werden, San Diego, Calif.; Francis C. Grant, Philadelphia; W. McK. Craig, Rochester, Minn., and D. N. Buchanan, Chicago.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Francis C. Grant, Philadelphia; vice chairman, Richard M. Brickner, New York; secretary, Paul C. Bucy, Chicago; executive committee: Henry R. Viets, Boston; Samuel D. Ingham, Los Angeles, and Francis C. Grant, Philadelphia; delegate, Tom B. Throckmorton, Des Moines, Iowa; alternate, Edward J. Delehanty, Denver; representative on American Board of Psychiatry and Neurology, Titus H. Harris, Galveston, Texas; representative to Scientific Exhibit, Roland P. Mackay, Chicago.

Dr. Tom B. Throckmorton, Des Moines, Iowa, delegate to the House, made a report on the session of the House of Delegates, which was accepted.

It was voted that a letter of congratulations be sent to Dr. Rock Sleyster, Wauwatosa, Wis., President-Elect.

Dr. A. E. Bennett, Omaha, read a paper on "Horse Serum Neuritis." Discussed by Drs. Foster Kennedy, New York; Walter Freeman, Washington, D. C.; John B. Doyle, Los Angeles; Hyman I. Vener, Los Angeles; Henry R. Viets, Boston; Tom B. Trockmorton, Des Moines, Iowa; Leopold Brahdy, New York; L. H. Ziegler, Wauwatosa, Wis., and A. E. Bennett, Omaha.

Dr. Josephine B. Neal, New York, read a paper on "The Treatment of Acute Infections of the Central Nervous System with Sulfanilamide." Discussed by Drs. R. Cannon Eley, Boston; Henry W. Woltman, Rochester, Minn., and Josephine B. Neal, New York.

Dr. R. P. Mackay, Chicago, read a paper on "Chronic Adhesive Spinal Arachnoiditis: A Clinical and Pathologic Study." Discussed by Drs. John B. Doyle, Los Angeles; J. M. Nielsen, Los Angeles, and R. P. Mackay, Chicago.

Drs. H. H. Merritt and T. J. Putnam, Boston, presented a paper on "Clinical Experiences with Diphenylhydantoin: A New Anticonvulsant Drug." Discussed by Drs. Eugene Ziskind, Los Angeles; Burt R. Shurly, Detroit, and T. J. Putnam, Boston.

Dr. William J. German Jr., New Haven, Conn., read a paper on "Results of Removal of Cerebral Cortical Scars."

Drs. Leonard T. Furlow and Ernest Sachs, St. Louis, presented a paper on "Subpial Resection of the Cerebral Cortex for Focal Epilepsy: Further Observations."

These two papers were discussed by Drs. R. Glen Spurling, Louisville, Ky.; William J. German Jr., New Haven, Conn., and Leonard T. Furlow, St. Louis.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9:05 by the chairman, Dr. Joseph V. Klauder, Philadelphia.

Dr. Howard Fox, New York, read the report of the Committee on American Academy of Dermatology and Syphilology: "At the last meeting of this section on June 11, 1937, the chairman, Dr. O'Leary, appointed a committee of seven with myself as chairman to study the formation of an American Academy of Dermatology and Syphilology. The committee met in Chicago on Sept. 10, 1937, a time that was also chosen for the meeting of the organizing committee of the International Congress. This offered an unusual opportunity for a large group of dermatologists representing all parts of the country to meet and discuss the proposed American Academy. Accordingly, with the consent of Dr. O'Leary, the committee was enlarged to include the members of the congress committee, making a total of seventeen. A meeting of this enlarged committee was held and it was unanimously agreed that the proposed academy should be formed in the near future.

"The meeting of the Central States Dermatological Society in Detroit on January 14 afforded an opportunity for a large number of dermatologists to get together and form the new academy. At this meeting, which was attended by 300 dermatologists, a constitution was adopted and the American Academy of Dermatology and Syphilology was organized. Further details of this inaugural meeting have been published in the *Archives of Dermatology and Syphilology* and in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION."

Dr. Oliver S. Ormsby, Chicago, reported that the joint committee of the American Dermatological Association and the Section on Dermatology and Syphilology of the American Medical Association to make preparations for the International Congress on Dermatology and Syphilology had organized and elected Dr. Paul A. O'Leary, Rochester, Minn., secretary general. Dr. O'Leary supplemented the report with an outline of the plans for the congress to be held Sept. 9, 1940, at the Waldorf-Astoria in New York. Dr. Elmore B. Tauber, Cincinnati, further amplified the report with respect to the arrangements for financing the congress.

Dr. C. Guy Lane, Boston, read the following report of the American Board of Dermatology and Syphilology: "At the examination of the board last year in Philadelphia ninety-five applicants for certificates were considered; seventy-seven were examined (twelve of these for reexamination); fifty-one passed, twelve failed and fourteen were conditioned in one or more subjects. Certificates were awarded to the fifty-one candidates who completed the examination satisfactorily, so that diplomates of the board now number 383. During the past year a new booklet of information has been issued, a booklet on opportunities for graduate training has been revised and published, and a new issue of the Registry prepared, with both alphabetical and geographic sections. The syllabus is still in the process of revision. In February there was a meeting of the Advisory Board for Medical Specialties in which representatives of this board participated. Representatives of the twelve boards already formed, and other agencies interested in graduate medical education, discussed numerous questions. Among the most important were the following: (1) Further boards will probably be made subsidiaries of one of the existing boards; (2) a Commission on Graduate Medical Education has been formed and funds obtained for a three year study of educational facilities for graduate medical study; (3) the question of certification by more than one board was discussed, but the Advisory Board opposed multiple certification; (4) the assessment for the various participating bodies was reduced; (5) effective date of special training requirements was advanced to

Jan. 1, 1942. The authorities of the American Medical Association protest very strongly against the meeting of the various boards at the time of the A. M. A. meeting, so that it seems probable that the time of the board examination will be changed to coincide with the meeting of the new American Academy of Dermatology and Syphilology. It also seems probable that representation of the academy on the board should be arranged."

Dr. Harry R. Foerster, Milwaukee, chairman of the nominating committee, offered for the committee the name of Dr. Charles C. Dennie, Kansas City, Mo., to succeed himself on the American Board of Dermatology and Syphilology. The nomination was seconded and Dr. Dennie was unanimously elected.

Dr. Stefan Rothman, Budapest, Hungary, was presented by the chairman and invited to participate in the discussions.

Dr. Howard Fox, New York, presented the following report with regard to the *Archives of Dermatology and Syphilology:* "I want to thank the members of the section for their very kind cooperation in my efforts to run the *Archives* as well as I could, and I am also indebted to the other members of the editorial board for reviewing certain very technical articles. The Transactions, as Dr. Pusey used to say, constitute the most difficult problems of the *Archives,* and I certainly feel that way myself. There has been, I am glad to say, considerable improvement recently in the Transactions, largely due to the work of either the secretaries or small editorial boards that have been appointed by the individual societies, but with the improvement in the substance of the Transactions there has been unfortunately a delay and they have been slower than usual in reaching my office. I hope that you will do all you can in the future to speed up these Transactions, because otherwise I expect to spend the entire summer correcting them. It is going to be possible in the future to have photographic illustrations of cases and histopathologic cuts in the Transactions. I think that will greatly increase the value of the Transactions. In the preparation of manuscripts I would certainly urge every author, whether he writes an elaborate paper or merely reports a case in one of the societies, to become familiar with the book known as Medical Writing, by Dr. Fishbein. It contains certain rules and regulations that seem arbitrary but really are not so, and it contains a lot of valuable information about the preparation of manuscripts which will help you greatly, and I am sure if you follow these suggestions it will help the editor."

As chairman of the Advisory Committee on Syphilis Control, Dr. Paul A. O'Leary, Rochester, Minn., read the following letter from Dr. Thomas Parran, Surgeon General, United States Public Health Service, dated May 17, 1938:

> I have learned from several sources that some of the dermatosyphilologists of the United States are of the opinion that the Public Health Service intends to utilize the services of specialists in internal medicine and other specialists in the field of medicine to the exclusion of dermatologists in the present campaign against syphilis. There is no intention to divorce syphilology from dermatology.
>
> The syphilis problem in the United States is an enormous one, and I can assure you that the services of both dermatosyphilologists and internists will be required. Indeed, so prevalent is syphilis that it is my opinion that the aid of all general practitioners will be needed in addition to the special assistance of experts in the field.
>
> The action of your committee in endorsing the campaign to control syphilis about a year ago was most encouraging. I hope that it will be possible to depend on you and the members of your Association in the prosecution of this important work in the future.

Dr. Joseph V. Klauder, Philadelphia, read the chairman's address, entitled "Erysipeloid as an Occupational Disease."

The following papers were read as a symposium on "Occupational Dermatoses":

Dr. C. Guy Lane, Boston: "Occupational Dermatoses: An Educational Program."

Dr. Louis Schwartz, New York: "The Incidence of Occupational Dermatoses and Their Causes in the Basic Industries."

Drs. Marion B. Sulzberger, New York, and Clark W. Finnerud, Chicago: "Industrial Dermatoses: Remarks on Criteria for Diagnosis."

Drs. Earl D. Osborne and James W. Jordon, Buffalo: "The Practical Aspect of the Prevention of Industrial Dermatoses."

Dr. John G. Downing, Boston: "Analysis of Claims in Industrial Dermatoses."

Dr. Harry R. Foerster, Milwaukee: "The Compensation Laws and Related Medicolegal Considerations of Industrial Dermatoses."

These six papers were discussed by Drs. Charles C. Dennie, Kansas City, Mo.; Cleveland J. White, Chicago; Hiram E. Miller, San Francisco; Stefan Rothman, Budapest, Hungary; J. Harper Blaisdell, Boston; Howard J. Parkhurst, Toledo, Ohio; Elmore B. Tauber, Cincinnati; Joseph V. Klauder, Philadelphia; M. T.-R. Maynard, San Jose, Calif.; Joseph Grindon, St. Louis; Eugene F. Traub, New York; C. Guy Lane, Boston; Louis Schwartz, New York; Clark W. Finnerud, Chicago; Earl D. Osborne, Buffalo; John G. Downing, Boston, and Harry R. Foerster, Milwaukee.

It was voted, on motion of Dr. Elmore B. Tauber, Cincinnati, that the papers in this symposium be published as a group.

THURSDAY, JUNE 16—MORNING

Dr. Clark W. Finnerud, Chicago, chairman of the Committee on Scientific Exhibit, presented the report of the committee as follows:

Dr. Fishbein tells me that it has come to his attention repeatedly in recent years that many individuals come to the annual meeting not to attend the scientific section meetings but to spend their full time in the Scientific Exhibit. He feels, as do most of the other officers, that it is really the most important part of the annual meeting. In our section, which was so ably built up by Dr. Weidman, things which he adopted have been copied by the various sections. This year our exhibit has been largely a practical one. We are handicapped by the fact that we are so far from the East this year, although the California exhibits have been exceptionally fine; we have been limited for space and have had to cut down considerably on the number of exhibits, and those who have been given space had to cut down to a minimum; our exhibit is not so neat as usual, but I think you will agree that any one who is willing to spend two or three hours there will find a world of instruction available, particularly in the industrial dermatoses portion, although everything else is very well illustrated. From the standpoint of instruction we really feel this year's exhibit has been very much worth while.

I presume you all feel, as I do, that the section should go along as in past years with this phase of the activities.

Dr. Downing said yesterday that the finest way to learn about any subject is to put on an exhibit in it or to prepare a paper on it. Dr. O'Leary remarked that a tremendous amount of interest centers around the exhibits illustrated with slides and particularly colored slides, and more especially colored motion pictures. I would predict that in the future there will tend to be more and more exhibits of that nature.

Our bank account is in a thoroughly healthy state owing to some financial aid annually, about $25 a year, from the American Medical Association. We have a balance of $88.76, which is, I think, approximately $58 less than was turned over to me by Dr. Weidman in 1935.

The chairman appointed Drs. Harold N. Cole, Cleveland, Elmore B. Tauber, Cincinnati, and Howard Fox, New York, a committee to audit the books of the Committee on Scientific Exhibit.

The chairman called for reports from the Committees on Cosmetics and Industrial Dermatoses. There were no reports from these committees.

Dr. Earl D. Osborne, Buffalo, announced the dates of the meeting of the Academy of Dermatology and Syphilology as Nov. 14-15, 1938, at the Jefferson Hotel, St. Louis, and outlined the program.

Dr. Earl D. Osborne, Buffalo, as the section representative on the Council on Industrial Health of the American Medical Association, urged the members to answer questionnaires and to cooperate with the Council in its endeavor to formulate a compendium of industrial conditions.

Dr. C. Guy Lane, Boston, presented the following report of the Committee on Industrial Dermatoses:

At the meeting last year it was announced that the Council on Industrial Health had been authorized by the Trustees of the Association. This Council has been appointed and has organized. Dr. Earl D. Osborne has been appointed as the

representative of dermatology and has been active in this organization. A broad program has been outlined, and with the resources of the A. M. A. it is possible to see great progress in this subject in the next few years. The recommendation of this committee for a symposium has been carried out in this section and at the American Dermatological Association meeting, and an attempt will be made to have these papers published together as a separate monograph or perhaps as a supplement to the *Archives*. The matter of definitions and criteria are of major importance and will be carefully considered by this committee with a view to making a report to the section next year.

For the future the committee plans to cooperate with the new Council on Industrial Health in every possible way and to continue the development of subcommittees interested in this phase of Dermatology.

C. GUY LANE.
HARRY R. FOERSTER.
JOHN G. DOWNING.
CHARLES C. DENNIE.
MARION B. SULZBERGER.

Dr. Harold N. Cole, Cleveland, reported that the auditing committee had examined the books of the Committee on Scientific Exhibit and found them in order.

Dr. Reuben L. Kahn, Ann Arbor, Mich., read a paper entitled "Are There Paradoxic Serum Reactions in Syphilis?" Discussed by Drs. Frederick G. Novy Jr., Oakland, Calif.; Paul A. O'Leary, Rochester, Minn.; Stefan Rothman, Budapest, Hungary; William H. Goeckerman, Los Angeles; Harry M. Robinson Sr., Baltimore; Joseph V. Klauder, Philadelphia, and Reuben L. Kahn, Ann Arbor, Mich.

Drs. Donald M. Pillsbury and H. Harris Perlman, Philadelphia, presented a paper on "Acetarsone Therapy in 187 Cases of Prenatal Syphilis."

Drs. Harry M. Robinson and Harry M. Robinson Jr., Baltimore, presented a paper on "Acetarsone Orally in the Treatment of Acquired Syphilis in Adults."

These two papers were discussed by Drs. Harold N. Cole, Cleveland; Charles C. Dennie, Kansas City, Mo.; George V. Kulchar, San Francisco; W. Ray Jones, Seattle; Donald M. Pillsbury, Philadelphia, and Harry M. Robinson, Baltimore.

Drs. Torald H. Sollmann, Harold N. Cole, Katharine I. Henderson, Garrett A. Cooper, W. R. Love and W. F. Schwartz, Cleveland, presented a paper on "Combination Courses of Bismuth Administration." Discussed by Drs. George V. Kulchar, San Francisco; P. J. Hanzlik, San Francisco; Ben A. Newman, Los Angeles; Joseph Grindon, St. Louis; Harry M. Robinson, Baltimore; Elmore B. Tauber, Cincinnati, and Harold N. Cole, Cleveland.

Dr. Samuel Goldblatt, Cincinnati, read a paper on "Neurosyphilis in the Negro: Spinal Fluid Manifestations in Untreated and Treated Cases." Discussed by Drs. Marque O. Nelson, Tulsa, Okla.; Edward L. Merritt, Fall River, Mass.; Arthur A. Herold, Shreveport, La., and Samuel Goldblatt, Cincinnati.

Drs. Paul A. O'Leary, Rochester, Minn., Harold N. Cole, Cleveland, Joseph Earle Moore, Baltimore, John H. Stokes, Philadelphia, Udo J. Wile, Ann Arbor, Mich., Thomas Parran, R. A. Vonderlehr and Lida J. Usilton, Washington, D. C., presented a paper on "Tabes Dorsalis: Cooperative Clinical Studies in the Treatment of Syphilis." Discussed by Dr. Stefan Rothman, Budapest, Hungary.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Bedford Shelmire, Dallas, Texas; vice chairman, Robert C. Jamieson, Detroit; secretary, C. F. Lehmann, San Antonio, Texas; delegate, Clyde Cummer, Cleveland; alternate, Harold N. Cole, Cleveland; Scientific Exhibit Committee chairman, Hamilton Montgomery, Rochester, Minn.; Charles C. Dennie, Kansas City, Mo., American Board of Dermatology and Syphilology (elected Wednesday).

It was voted to send a message to Dr. Howard Morrow, San Francisco, regretting his absence, wishing him a speedy recovery, and congratulating him on his election as Vice President of the American Medical Association.

The chairman conveyed to the members for Dr. Schwartz his appreciation for their cooperation in the exhibit, which received the certificate, and his request for their continued support.

Dr. Henry A. Brunsting, Toledo, Ohio, read a paper on "Hidrosadenitis Suppurativa, Abscess of the Apocrine Sweat Glands: A Study of the Clinical and Pathologic Features, with a Report of Twenty-Two Cases and a Review of the Literature." Discussed by Drs. William H. Goeckerman, Los Angeles; Donald M. Pillsbury, Philadelphia, and Henry A. Brunsting, Toledo, Ohio.

Dr. Duncan O. Poth, San Antonio, Texas, read a paper on "Tumor-like Keratoses." Discussed by Drs. H. J. Templeton, Oakland, Calif.; R. H. Crockett, San Antonio, Texas; C. F. Lehmann, San Antonio, Texas; M. T.-R. Maynard, San Jose, Calif.; James H. Mitchell, Chicago; Fred D. Weidman, Philadelphia; W. F. Spiller, Galveston, Texas, and Duncan O. Poth, San Antonio, Texas.

Dr. Fred D. Weidman, Philadelphia, read a paper on "Acne Urticata Polycythemica with Positive Oxidase Reaction in Sections and in Lesions in Situ." Discussed by Drs. J. Gardner Hopkins, New York; Joseph V. Klauder, Philadelphia; R. H. Crockett, San Antonio, Texas; Jesse Ettelson, Portland, Ore., and Fred D. Weidman, Philadelphia.

Dr. John F. Madden, St. Paul, read a paper on "Cholesterol Studies and Low Fat Diet in Psoriasis." Discussed by Drs. Richard J. Bailey, Spokane, Wash.; George V. Kulchar, San Francisco, and John F. Madden, St. Paul.

Drs. Carl W. Laymon and Harry A. Cumming, Minneapolis, presented a paper on "Sensitiveness of the Skin to X-Rays Following the Ingestion of Arsenic." Discussed by Drs. W. H. Guy, Pittsburgh; Donald M. Pillsbury, Philadelphia, and Carl W. Laymon, Minneapolis.

Dr. J. W. Tedder, New Orleans, read a paper on "Sulfanilamide Dermatitis." Discussed by Drs. Marcus B. Caro, Chicago; Stephan Epstein, Marshfield, Wis.; Ben A. Newman, Los Angeles, and J. W. Tedder, New Orleans.

On motion of Dr. Harold N. Cole, Cleveland, a vote of appreciation was passed for the very successful meeting and the hospitality of the San Francisco members.

An expression of appreciation was extended to the retiring officers for their efforts and for the interesting program.

SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. Robert T. Legge, Berkeley, Calif.

Dr. Robert T. Legge, Berkeley, Calif., read the chairman's address, entitled "Industrial Medicine of Tomorrow."

Drs. R. R. Sayers and J. J. Bloomfield, Washington, D. C., presented a paper on "Public Health Aspects of Industrial Hygiene." Discussed by Drs. L. D. Bristol, New York; H. W. Gibbons, Sacramento, Calif., and R. R. Sayers, Washington, D. C.

Dr. R. T. Johnstone, Los Angeles, read a paper on "Industrial Medicine's Challenge to the Internist." Discussed by Drs. Leopold Brahdy, New York; Dwight O'Hara, Boston; August F. Knoefel, Terre Haute, Ind., and A. T. McCormack, Louisville, Ky.

Dr. A. G. Kammer, Indiana Harbor, East Chicago, Ind., read a paper on "Medical Supervision of Benzene Plant Workers." Discussed by Drs. Peter K. Knoefel, Louisville, Ky.; R. R. Sayers, Washington, D. C.; J. M. McCullough, Crockett, Calif., and A. G. Kammer, Indiana Harbor, East Chicago, Ind.

Dr. Carey P. McCord, Detroit, read a paper on "Noise and Its Effects on Human Beings." Discussed by Drs. Vern O. Knudsen, Los Angeles; Leopold Brahdy, New York, and Carey P. McCord, Detroit.

THURSDAY, JUNE 16—AFTERNOON

Dr. R. H. Riley, Baltimore, read a paper on "Maryland's Program for the Control of Tuberculosis." Discussed by Drs.

Frank L. Kelly, Berkeley, Calif.; Jesse D. Cook, Olive View, Calif.; Roy L. Cleere, Denver; Robert E. Plunkett, Troy, N. Y., and R. H. Riley, Baltimore.

Dr. Louis Cohen, Philadelphia, read a paper on "Hematogenous Tuberculosis and Silicosis." Discussed by Drs. Philip J. Hodes, Philadelphia; Frederick Slyfield, Seattle; Philip H. Pierson, San Francisco; Jacob Gershon-Cohen, Philadelphia, and Louis Cohen, Philadelphia.

Dr. Nina Simmonds, San Francisco, read a paper on "Recent Researches in Nutrition in Relation to Preventive Medicine." Discussed by Drs. M. J. Rosenau, Chapel Hill, N. C.; W. A. Sawyer, Rochester, N. Y.; L. D. Bristol, New York, and Nina Simmonds, San Francisco.

Dr. Charles Armstrong, Washington, D. C., read a paper on "Studies of the Mechanism of Intranasal Infections." Discussed by Drs. Edwin William Schultz, Stanford University, Calif.; Irving J. Wolman, Philadelphia, and Charles Armstrong, Washington, D. C.

Dr. Edward S. Rogers, Albany, N. Y., read a paper on "Two and One-Half Years of Pneumonia Control in New York State." Discussed by Drs. Peter Irving, New York; G. M. Ekwurzel, San Francisco, and Edward S. Rogers, Albany, N. Y.

Drs. H. S. Diehl, A. B. Baker and Donald W. Cowan, Minneapolis, presented a paper on "Cold Vaccines: An Evaluation Based on a Controlled Study." Discussed by Drs. W. A. Sawyer, Rochester, N. Y.; L. D. Bristol, New York; Robert K. Cutter, Berkeley, Calif., and H. S. Diehl, Minneapolis.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. I. C. Riggin, Richmond, Va.; vice chairman, Dr. H. S. Diehl, Minneapolis; secretary, Dr. W. A. Sawyer, Rochester, N. Y.; executive committee: Dr. L. D. Bristol, New York; Dr. Robert T. Legge, Berkeley, Calif., and Dr. I. C. Riggin; delegate, Dr. Stanley H. Osborn, Hartford, Conn.; Dr. R. R. Sayers, Washington, D. C.

Dr. W. P. Shepard, San Francisco, introduced the following resolution, which on motion, duly seconded, was adopted:

WHEREAS, The Section on Preventive and Industrial Medicine and Public Health has had a most profitable and enjoyable session, with excellent facilities for our purposes, and every effort has been put forth to insure our comfort and the success of our meeting; be it

Resolved, That we express our gratitude to the Honorable Mayor of San Francisco, Angelo J. Rossi, and to the Director of Health of San Francisco, Dr. Jacob C. Geiger, for their hospitality and generosity.

Dr. W. P. Shepard, San Francisco, introduced the following resolution, which on motion, duly seconded, was adopted:

WHEREAS, The professional medical fields represented in this section are subject to rapid and increasing changes at this time; and

WHEREAS, The section is composed of three separate and distinct fields of specialization; and

WHEREAS, The American Medical Ass ciation has recently formed a Council on Industrial Health, with which this section will wish to work in close cooperation; be it

Resolved, That it is the sense of this section that the section delegate and alternate to the House of Delegates should hereafter serve not more than two terms, totaling four years.

Dr. Ernest C. Dickson, San Francisco, read a paper on "Coccidioidiomycosis: The Preliminary Acute Infection with Fungus Coccidioides." Discussed by Drs. K. F. Meyer, San Francisco; Kenneth H. Abbott, Ontario, Calif., and Ernest C. Dickson, San Francisco.

Dr. W. M. Dickie, Berkeley, Calif., read a paper on "Health of the Migrant." Discussed by Drs. Myrnie A. Gifford, Bakersfield, Calif.; A. T. McCormack, Louisville, Ky.; Mary C. Baldwin, Riverside, Calif.; Peter Cohen, Santa Maria, Calif., and W. M. Dickie, Berkeley, Calif.

Dr. Henry A. Luce, Detroit, read a paper on "The Next Great Battle for Soldiers of Medicine." Discussed by Drs. J. N. Baker, Montgomery, Ala., and A. T. McCormack, Louisville, Ky.

Dr. James Houloose, Long Beach, Calif., read a paper on "The Contribution of Mental Hygiene to Education on the Elementary Level." Discussed by Dr. Frank E. Sawyer, Oakland, Calif.

Dr. Forrest N. Anderson, Los Angeles, read a paper on "Some Physiologic Concepts in Mental Hygiene." Discussed by Dr. L. D. Bristol, New York.

SECTION ON UROLOGY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2:05 by the chairman, Dr. Albert J. Scholl, Los Angeles.

The chairman appointed Dr. H. C. Bumpus Jr., Pasadena, Calif., to act on the executive committee in the absence of Dr. W. E. Walther, New Orleans.

Dr. E. Perry McCullagh, Cleveland, read a paper on "Treatment of Testicular Deficiency with Testosterone Propionate." Discussed by Drs. H. L. Kretschmer, Chicago; George G. Reinle, Oakland, Calif.; R. V. Day, Los Angeles; L. F. Hawkinson, Brainerd, Minn., and E. Perry McCullagh, Cleveland.

Drs. C. F. Schroeder, Wyandotte, Mich., and R. E. Cumming, Detroit, presented a paper on "Resection of the Superior Hypogastric Plexus and the Sacral Sympathetic Ganglions for the Relief of Bladder Pain." Discussed by Drs. Alexander B. Hepler, Seattle; J. C. Negley, Glendale, Calif.; Reed M. Nesbit, Ann Arbor, Mich., and C. F. Schroeder, Wyandotte, Mich.

The following papers were read as a "Symposium on Preliminary Investigation and Treatment of Prostatic Obstruction":

Dr. Harold C. Habein, Rochester, Minn.: "Obstruction in the Neck of the Bladder: Criteria of Operability."

Reed M. Nesbit, Ann Arbor, Mich.: "Some Refinements in the Technic of Transurethral Prostatectomy."

Edwin Davis, Omaha: "Prostatectomy or Transurethral Prostatic Resection? A Plea for the Selectionist."

These three papers were discussed by Drs. H. C. Bumpus Jr., Pasadena, Calif.; Alfred I. Folsom, Dallas, Texas; Sidney Olsen, San Francisco; B. H. Hager, Los Angeles; N. G. Alcock, Iowa City; A. B. Cecil, Los Angeles; Harold C. Habein, Rochester, Minn., and Edwin Davis, Omaha.

Drs. Robert V. Day and Harry W. Martin, Los Angeles, presented a paper on "Vesical Diverticulum: A Feature Study."

Dr. George W. Fish, New York, read a paper on "Large Solitary Serous Cysts of the Kidney."

These two papers were discussed by Drs. Alfred I. Folsom, Dallas, Texas; T. Leon Howard, Denver; Thomas E. Gibson, San Francisco, and Robert V. Day, Los Angeles.

THURSDAY, JUNE 16—AFTERNOON

The secretary, Dr. William P. Herbst, Washington, D. C., read a report from the American Board of Urology, a communication from the Commission on Graduate Medical Education, and a communication from the Council on Industrial Health.

The meeting was called to order at 2:15 by the chairman, Dr. Albert J. Scholl, Los Angeles.

Drs. Stanley R. Woodruff, Jersey City, N. J., and Arthur H. Milbert, New York, presented a paper on "The Significance of Roentgenographic Studies of the Urinary Tract During and After Pregnancy." Discussed by Drs. Clarence G. Bandler, New York, and George C. Prather, Boston.

Dr. Albert J. Scholl, Los Angeles, read the chairman's address, entitled "Urologic Conditions Resembling Chronic Glomerulonephritis."

The following papers were read as a symposium on "Nonspecific and Gonococcic Infections of the Urinary Tract":

Dr. Anson L. Clark, Oklahoma City: "Sulfanilamide Therapy in Nonspecific Infections of Urinary Tract."

Drs. Bernard Silver and H. Manning Elliott, Los Angeles: "The Treatment of Gonorrhea with Sulfanilamide."

Dr. John H. Morrissey, New York: "Surgical Procedures in the Treatment of Complications in Gonorrhea."

These three papers were discussed by Drs. A. Elmer Belt, Los Angeles; James R. Dillon, San Francisco; W. Ray Jones, Seattle; Wirt B. Dakin, Los Angeles, and Henry Helmholz, Rochester, Minn.

Drs. John L. Emmett and John M. Kibler, Rochester, Minn., presented a paper on "Surgical Indications in Renal Tuberculosis." Discussed by Drs. John R. Hand, Portland, Ore.; Frederick Lieberthal, Chicago; J. C. Negley, Los Angeles, and William P. Herbst, Washington, D. C.

FRIDAY, JUNE 17—AFTERNOON

The following officers were elected: chairman, Dr. William P. Herbst, Washington, D. C.; vice chairman, Dr. Grayson Carroll, St. Louis; secretary, Dr. Vincent J. O'Conor, Chicago; certification board member, Dr. T. Leon Howard, Denver; delegate, Dr. H. C. Bumpus Jr., Pasadena, Calif.; alternate, Dr. George G. Reinle, Oakland, Calif.

Dr. John K. Ormond, Detroit, read a paper on "Torsion of the Testicle." Discussed by Drs. Roger W. Barnes, Los Angeles; James A. May, San Diego, Calif., and John K. Ormond, Detroit.

Dr. Duncan M. Morison, Edinburgh, Scotland, read a paper on "Routes of Absorption in Total Ureteral Obstruction: Some Further Observations." Discussed by Drs. Frank Hinman, San Francisco; Charles P. Mathe, San Francisco, and Duncan M. Morison, Edinburgh, Scotland.

The following papers were read as a symposium on "Genito-Urinary Malignant Neoplasms":

Dr. Hugh Cabot, Rochester, Minn.: "Neoplasms of the Testis: A Study of the Results of Orchidectomy With and Without Irradiation."

Dr. Henry G. Bugbee, New York: "Surgery of Genito-Urinary Malignancy."

These two papers were discussed by Drs. George C. Prather, Boston; Clark M. Johnson, San Francisco; A. Elmer Belt, Los Angeles, and Hugh Cabot, Rochester, Minn.

Dr. Norman W. Roome, Chicago, read a paper on "The Visualization of the Adrenal Glands by Air Injection." Discussed by Dr. George W. Fish, New York.

SECTION ON ORTHOPEDIC SURGERY

WEDNESDAY, JUNE 15—AFTERNOON

The meeting was called to order at 2 o'clock by the chairman, Dr. John Dunlop, Pasadena, Calif.

On motion regularly made and seconded, Dr. Henry W. Meyerding, Rochester, Minn., was elected delegate to the House of Delegates.

Dr. George A. L. Inge, New York, read a paper on "Synovectomy of the Knee Joint for Chronic Arthritis." Discussed by Drs. David H. Kling, Los Angeles; J. Albert Key, St. Louis, and George A. L. Inge, New York.

Dr. Henry W. Meyerding, Rochester, Minn., read a paper on "Spondylolisthesis: An Etiologic Factor in Backache." Discussed by Drs. Sylvan L. Haas, San Francisco; Charles LeRoy Lowman, Los Angeles; J. Albert Key, St. Louis, and Henry W. Meyerding, Rochester, Minn.

Drs. C. C. Coleman, Richmond, Va., and J. M. Meredith, University, Va., presented a paper on "Treatment of Fracture-Dislocation of the Spine Associated with Cord Injury." Discussed by Drs. Frederic C. Bost, San Francisco, and C. C. Coleman, Richmond, Va.

The following were appointed as a nominating committee: Dr. J. Albert Key, St. Louis, chairman; Dr. Walter G. Stern, Cleveland, and Dr. Jesse T. Nicholson, Philadelphia.

Dr. George J. Garceau, Indianapolis, read a paper on "Fractures of the Lower End of the Humerus." Discussed by Drs. J. H. Dorman, Dallas, Texas; H. W. Spiers, Los Angeles; J. Albert Key, St. Louis; Hugh T. Jones, Los Angeles; Steele F. Stewart, Los Angeles, and George J. Garceau, Indianapolis.

Dr. Charles Murray Gratz, New York, read a paper on "Fascial Adhesions in Low Back Pain and Arthritis." Discussed by Drs. Millard C. Beyer, Akron, Ohio; David R. Telson, Brooklyn; J. Albert Key, St. Louis, and Charles Murray Gratz, New York.

Dr. Steele F. Stewart, Los Angeles, read a paper on "Relation Between Birth Injuries and the Obstetric History." Discussed by Drs. Oscar L. Miller, Charlotte, N. C.; J. Albert Key, St. Louis, and Walter G. Stern, Cleveland.

THURSDAY, JUNE 16—AFTERNOON

Dr. Charles F. Nelson, Beverly Hills, Calif., read a paper on "Factors to be Considered in Bone Metabolism, with Suggestions as to the Clinical Value of Vitamin D and Parathyroid Extract." Discussed by Drs. J. Albert Key, St. Louis; Harold E. Crowe, Los Angeles, and Charles F. Nelson, Beverly Hills, Calif.

Dr. Philip Lewin, Chicago, read a paper on "Newer Trends in Teaching Orthopedic Surgery." Discussed by Drs. J. Albert Key, St. Louis; Earl D. McBride, Oklahoma City, and Philip Lewin, Chicago.

Dr. John Dunlop, Pasadena, Calif., read the chairman's address, entitled "Transcondylar Fractures of the Humerus in Childhood."

Dr. Earl D. McBride, Oklahoma City, read a paper on "The Use of Absorbable Metal in Bone Surgery." Discussed by Drs. Charles Scott Venable, San Antonio, Texas; J. Albert Key, St. Louis, and Earl D. McBride, Oklahoma City.

Dr. C. Fred Ferciot, Lincoln, Neb., read a paper on "Dashboard Fractures of the Patella." Discussed by Drs. G. Masser Taylor, Los Angeles; August F. Knoefel, Terre Haute, Ind.; David R. Telson, Brooklyn; John Dunlop, Pasadena, Calif., and C. Fred Ferciot, Lincoln, Neb.

FRIDAY, JUNE 17—AFTERNOON

Dr. Roland Hammond, Providence, R. I., presented the report of the delegate to the House of Delegates, Dr. Henry W. Meyerding, Rochester, Minn., which was accepted.

The following officers were elected: chairman, Oscar L. Miller, Charlotte, N. C.; vice chairman, Robert V. Funsten, Charlottesville, Va.; secretary, Guy A. Caldwell, New Orleans; executive committee: Fremont A. Chandler, Chicago; John Dunlop, Pasadena, Calif., and Oscar L. Miller, Charlotte, N. C.; delegate, Willis C. Campbell, Memphis, Tenn.; alternate, Edwin W. Ryerson, Chicago. The present members of the American Board of Orthopedic Surgery, Willis C. Campbell, Memphis, Tenn., Frank R. Ober, Boston, and Fremont Chandler, Chicago, were reelected.

Dr. J. Albert Key, St. Louis, read a paper on "Common Sense in the Treatment of Acute Hematogenous Osteomyelitis." Discussed by Drs. W. D. Griesemer, Reading, Pa.; Jesse T. Nicholson, Philadelphia; John C. Wilson, Los Angeles; Earl D. McBride, Oklahoma City; Walter G. Stern, Cleveland; Charles F. Nelson, Beverly Hills, Calif., and J. Albert Key, St. Louis.

Dr. David R. Telson, Brooklyn, read a paper on "A Method of Reduction of Fractured Neck of the Femur by Transtrochanteric Skeletal Traction to Be Followed by Axial Fixation with Threaded Steel Pins, with a Report of Five Years' Follow Up on Transcervical Fixation." Discussed by Drs. Roland Hammond, Providence, R. I.; Martin B. Tinker Jr., Ithaca, N. Y., and David R. Telson, Brooklyn.

Dr. Barney J. Hein, Toledo, Ohio, read a paper on "Time Element in Fractures." Discussed by Drs. Donald C. Durman, Saginaw, Mich.; G. Masser Taylor, Los Angeles; Jesse T. Nicholson, Philadelphia; E. Payne Palmer, Phoenix, Ariz., and Barney J. Hein, Toledo, Ohio.

Dr. Walter G. Stern, Cleveland, read a paper on "Estimation of Disability After Injury." Discussed by Drs. R. W. Harbaugh, San Francisco; Earl D. McBride, Oklahoma City; Lionel D. Prince, San Francisco, and Walter G. Stern, Cleveland.

Dr. Charles S. Young, Los Angeles, read a paper on "The Operative Treatment of Pes Planus." Discussed by Drs. Maynard Harding, San Diego, Calif.; Arthur L. Fisher, San Francisco; Charles LeRoy Lowman, Los Angeles, and Charles S. Young, Los Angeles.

SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order at 9 o'clock by the chairman, Dr. Henry L. Bockus, Philadelphia.

Dr. Louis F. Bishop Jr., New York, read a paper on "Gastroenterology in the Practice of Cardiology." Discussed by Dr. John R. Twiss, New York.

Dr. Andrew C. Ivy, Chicago, read a paper on "The Effect of Smoking on the Activities of the Alimentary Tract." Discussed by Drs. Sidney A. Portis, Chicago, and Andrew C. Ivy, Chicago.

Drs. Martin E. Rehfuss and Guy M. Nelson, Philadelphia, presented a paper on "Gallbladder Infection, Its Experimental

Production and Attempts at Specific Therapy." Discussed by Drs. Garnett Cheney, San Francisco, and Guy M. Nelson, Philadelphia.

Dr. Paul C. Blaisdell, Pasadena, Calif., read a paper on "Operative Injury to the Anal Sphincter Mechansim." Discussed by Dr. Malcolm R. Hill, Los Angeles.

Drs. Claude C. Tucker and C. Alexander Hellwig, Wichita, Kan., presented a paper on "Proctologic Tumors: Diagnostic Difficulties and Pathologic Changes." Discussed by Drs. Curtice Rosser, Dallas, Texas; L. E. Brown, Corona, Calif.; Edward G. Martin, Detroit, and Claude C. Tucker, Wichita, Kan.

Dr. Wendell G. Scott, St. Louis, read a paper on "Recording the Movements of the Gastrointestinal Tract by Roentgen Kymography." Discussed by Drs. Charles W. Duden, St. Louis, and Wendell G. Scott, St. Louis.

Dr. Sara M. Jordan, Boston, read a paper on "Medical Aspect of Cancer of the Stomach." Discussed by Drs. Felix Cunha, San Francisco; George M. Underwood, Dallas, Texas, and Sara M. Jordan, Boston.

Dr. Harry Gauss, Denver, read a paper on "Gastrointestinal Symptoms in Disease of the Brain." Discussed by Drs. Edward G. Billings, Denver, and Theodore L. Althausen, San Francisco.

THURSDAY, JUNE 16—MORNING

Dr. Henry L. Bockus, Philadelphia, read the chairman's address, entitled "Training of the Gastroenterologic Internist."

The following papers were read as a symposium on "Ulcerative Colitis":

Dr. Thomas T. Mackie, New York: "The Medical Management of Chronic Ulcerative Colitis."

Drs. Elmer G. Wakefield and Charles W. Mayo, Rochester, Minn.: "Functional or Sociologic Disorders of the Colon: Medical and Surgical Considerations."

Dr. Thomas E. Jones, Cleveland: "The Surgical Treatment of Ulcerative Colitis."

Drs. John H. Willard, Philadelphia; J. F. Pessel, Trenton, N. J., and J. Warren Hundley, Philadelphia: "Prognosis of Ulcerative Colitis."

These four papers were discussed by Drs. William Fitch Cheney, San Francisco; John H. Fitzgibbon, Portland, Ore.; William C. Boeck, Los Angeles; Arthur L. Bloomfield, San Francisco; Julian M. Ruffin, Durham, N. C.; S. L. Bernstein, Cleveland; Sidney A. Portis, Chicago; Joseph Felsen, Brooklyn; A. H. Aaron, Buffalo; Thomas T. Mackie, New York; Elmer G. Wakefield, Rochester, Minn.; Thomas E. Jones, Cleveland, and J. F. Pessel, Trenton, N. J.

Drs. Leo R. Hardt, Morris Weissman and John S. Coulter, Chicago, presented a paper on "Studies on Treatment in Intestinal Tuberculosis." Discussed by Drs. Descum C. McKenney, Buffalo; Harry Gaus, Denver; Clement L. Martin, Chicago, and Morris Weissman, Chicago.

Dr. Martin S. Kleckner, Allentown, Pa., read a paper on "A Review of a Group of Proctologic Operations Using Spinocain as an Anesthetic." Discussed by Drs. Dudley A. Smith, San Francisco; Curtice Rosser, Dallas, Texas, and Martin S. Kleckner, Allentown, Pa.

Dr. Robert Elman, St. Louis, read a paper on "Intravenous Alimentation with Special Reference to Protein (Amino Acid) Metabolism." Discussed by Drs. Theodore L. Althausen, San Francisco; Thomas T. Mackie, New York, and Robert Elman, St. Louis.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Descum C. McKenney, Buffalo; vice chairman, Dr. A. H. Aaron, Buffalo; secretary, Dr. J. A. Bargen, Rochester, Minn.; executive committee: Dr. Louis A. Buie, Rochester, Minn.; Dr. Henry L. Bockus, Philadelphia, and Dr. Descum C. McKenney, Buffalo; delegate, Dr. Curtice Rosser, Dallas; alternate, Dr. Louis A. Buie, Rochester, Minn.; chairman Committee on Section Exhibit, Dr. Sara M. Jordan, Boston.

At the request of the chairman, the secretary read the following resolution:

Resolved, That the Section on Gastro-Enterology and Proctology of the American Medical Association recommend to the American Medical Association meeting here today that it records its emphatic opposition to any measure such as the proposed "State Humane Pound Law" which will hinder or curtail animal experimentation as conducted by those fully qualified in biology and medicine. It is the belief of this society that the present level of health and humane protection of man and animals and further advance in our knowledge of the phenomena of life can be maintained only by constant vigilance and by continued study of the nature of vital processes through the experimental investigation of living animals. Every effort should be made to provide the necessary animals for scientific studies rather than to interfere by the passage of hampering legislation.

On motion made by Dr. Curtice Rosser, Dallas, Texas, seconded by Dr. Sara M. Jordan, Boston, the resolution was adopted.

Dr. J. McDonald Milligan, Elgin, Ill., read a paper on "Clinical Observations on a Group of Ulcer Cases." Discussed by Drs. Grant H. Lanphere, Los Angeles; Fred H. Kruse, San Francisco; Sara M. Jordan, Boston; John H. Fitzgibbon, Portland, Ore., and J. McDonald Milligan, Elgin, Ill.

Drs. Frederic E. Templeton and A. W. Marcovich, Chicago, presented a paper on "The Value of Roentgenologic Demonstration of the Crater in the Duodenal Ulcer." Discussed by Drs. Theodore L. Althausen, San Francisco, and Frederic E. Templeton, Chicago.

Dr. David J. Sandweiss, Detroit, read a paper on "Sex Hormones in Peptic Ulcer." Discussed by Drs. Andrew C. Ivy, Chicago, and David J. Sandweiss, Detroit.

Drs. Joseph Bank, Phoenix, Ariz., and Roby John F. Renshaw, Los Angeles, presented a paper on "Gastritis: Correlation of Gastric Analysis and Clinical Observations with Gastroscopy."

Dr. Elmer B. Freeman, Baltimore, read a paper on "Gastroscopy as Compared with Other Methods of Diagnosis in Gastric Lesions."

These two papers were discussed by Drs. Roby John F. Renshaw, Los Angeles; Milford Owen Rouse, Dallas, Texas; P. E. T. Hancock, London, England; John H. Fitzgibbon, Portland, Ore.; Frederic E. Templeton, Chicago; Joseph Bank, Phoenix, Ariz., and Elmer B. Freeman, Baltimore.

Dr. James F. Weir, Rochester, Minn., read a paper on "Some Forms of Hepatitis Not Commonly Recognized." Discussed by Drs. Dwight L. Wilbur, San Francisco; Sidney A. Portis, Chicago; Edgar Wayburn, San Francisco, and James F. Weir, Rochester, Minn.

Dr. Virgil E. Simpson, Louisville, Ky., read a paper on "Strongyloidosis: A Discussion of Strongyloid Infestation with Emphasis on Its Therapy." Discussed by Dr. Thomas T. Mackie, New York.

Dr. Harry E. Bacon, Philadelphia, read a paper on "Extrarectal Metastatic Growths from Upper Abdominal Malignant Neoplasms." Discussed by Drs. Newton D. Smith, Rochester, Minn.; William H. Daniel, Los Angeles; Henry L. Bockus, Philadelphia; A. H. Aaron, Buffalo, and Harry E. Bacon, Philadelphia.

SECTION ON RADIOLOGY

WEDNESDAY, JUNE 15—MORNING

The meeting was called to order by the chairman, Dr. B. R. Kirklin, Rochester, Minn.

The chairman appointed Dr. John W. Pierson, Baltimore, to serve on the executive committee in the absence of Dr. Ross Golden, New York.

Dr. Harry Shay, Philadelphia, read a paper on "The Thymus: Studies of Some Changes in the Gonads and Pituitary Following Destruction of the Thymus by Roentgen Irradiation." Discussed by Drs. Edward L. Jenkinson, Chicago; Henry J. Ullmann, Santa Barbara, Calif., and Clyde K. Hasley, Detroit.

Drs. Harry H. Bowing and Robert E. Fricke, Rochester, Minn., presented a paper on "Factors Influencing the Radiosensitivity of Malignant Neoplasms of the Uterine Cervix." Discussed by Drs. William P. Healy, New York; Henry L. Schmitz, Chicago, and Henry J. Ullmann, Santa Barbara, Calif.

Dr. H. D. Kerr, Iowa City, read a paper on "The Irradiation of Kidney Tumors in Children." Discussed by Dr. Miley B. Wesson, San Francisco.

Dr. Justin J. Stein, Hines, Ill., read a paper on "Apical Lung Tumors." Discussed by Dr. L. H. Garland, San Francisco.

Drs. Richard Dresser and Roger C. Graves, Boston, presented a paper on "Supervoltage Roentgen Treatment of Carcinoma of the Bladder." Discussed by Drs. Robert S. Stone, San

Francisco; L. H. Garland, San Francisco; Henry J. Ullmann, Santa Barbara, Calif., and John T. Murphy, Toledo, Ohio.

Drs. James F. Kelly and D. Arnold Dowell, Omaha, presented a paper on "The Roentgen Treatment of Acute Peritonitis and Other Infections with Mobile Apparatus." Discussed by Drs. Frank E. Butler, Portland, Ore.; Frederick William O'Brien, Boston; R. H. Crockett, San Antonio, Texas; Wright Clarkson, Petersburg, Va.; Howard B. Hunt, Omaha; John J. Masterson, Brooklyn, and Henry J. Ullmann, Santa Barbara, Calif.

THURSDAY, JUNE 16—MORNING

A joint meeting was held with the Section on Pediatrics. The proceedings are reported in the minutes of that section.

FRIDAY, JUNE 17—MORNING

The following officers were elected: chairman, Dr. Raymond Taylor, Los Angeles; vice chairman, Merrill Sosman, Boston; secretary, Dr. John T. Murphy, Toledo, Ohio; delegate, Dr. Edward H. Skinner, Kansas City, Mo.; alternate, Dr. Eugene P. Pendergrass, Philadelphia; representative of the Board of Radiology, John W. Pierson, Baltimore.

Dr. B. R. Kirklin, Rochester, Minn., read the chairman's address, entitled "Lipoid Pneumonitis."

Dr. William E. Howes, Brooklyn, read a paper on "Planigraphy: Its Application to Thoracic Diagnosis."

Dr. Sherwood Moore, St. Louis, read a paper on "Body Section Radiography in Surgical Conditions."

These two papers were discussed by Dr. Robert R. Newell, San Francisco, and Dr. L. H. Garland, San Francisco.

Dr. Jacob Abowitz, Los Angeles, read a paper on "Hydronephrosis Caused by Aberrant Renal Blood Vessels Demonstrated by Intravenous Urography." Discussed by Dr. A. A. Kutzmann, Los Angeles.

Dr. J. C. Bell, Louisville, Ky., read a paper on "Further Observations of the X-Ray Manifestations of Amebic Infections of the Large Bowel." Discussed by Dr. B. R. Kirklin, Rochester, Minn.

Dr. Joseph F. Elward, Washington, D. C., read a paper on "Epiphysitis of the Capitellum of the Humerus." Discussed by Drs. Carl H. Parker, Pasadena, Calif., and John W. Pierson, Baltimore.

Drs. Wilbur P. Bailey and William V. Knoll, Los Angeles, presented a paper on "Gastrocolic Fistulas." Discussed by Dr. J. D. Coate, Oakland, Calif.

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit at the San Francisco session was characterized by the high caliber of exhibits presented and the continuous and sustained interest shown by the ever present crowds in the aisles. There were 167 exhibits in all, of which 140 were presented by individual exhibitors, sixteen by government and national organizations, nine exhibits of organized medicine presented by the California Medical Association, Illinois State Medical Society, Indiana State Medical Association, and the headquarters group of the American Medical Association, and two special exhibits subsidized by the Board of Trustees.

The special exhibit on anesthesia was presented under the auspices of a committee composed of Ralph M. Waters, chairman, Madison, Wis.; P. J. Hanzlik, San Francisco; Chauncey D. Leake, San Francisco, and Philip D. Woodbridge, Boston. Demonstrations were given continuously throughout the week by a competent corps of anesthetists. A pamphlet describing the exhibit was distributed.

The special exhibit on fractures was presented under the auspices of a committee composed of Kellogg Speed, chairman, Chicago; Frank D. Dickson, Kansas City, Mo., and Walter Estell Lee, Philadelphia. More than fifty physicians from various parts of the country assisted with the demonstrations, and a pamphlet describing the exhibit was distributed. Acknowledgment is made to Major General C. R. Reynolds, the Surgeon General, United States Army, Washington, D. C.; Colonel Roger Brooke, M. C., United States Army, Letterman General Hospital, San Francisco; Lieutenant Colonel Norman T. Kirk, M. C., United States Army, Letterman General Hospital, San Francisco; Dr. C. H. Chandler, dean, Stanford University Medical School, San Francisco, and Mrs. Mitchell and Mrs. McMurray, nurses from the Stanford University Hospital, San Francisco, for the efficient service which they rendered in connection with the fracture exhibit. Appreciation is also expressed to Dr. Carleton Mathewson Jr., local representative in San Francisco for the Fracture Exhibit, for his excellent cooperation.

Other features of the San Francisco session included a Symposium on Industrial Dermatoses by the Section on Dermatology and Syphilology presented in cooperation with the United States Public Health Service, and motion picture programs by the Section on Surgery, General and Abdominal, Section on Obstetrics and Gynecology, Section on Ophthalmology, and Section on Orthopedic Surgery, shown in spaces adjoining the exhibits of those sections.

An endeavor was made to correlate the exhibits with papers read before the various sections of the Scientific Assembly, with the result that forty-nine papers were accompanied by material in the Scientific Exhibit.

REPORT OF THE COMMITTEE ON AWARDS

The Committee on Awards made the following report:

CLASS I

(Awards in Class I are made for exhibits of individual investigation, which are judged on the basis of originality and excellence of presentation.)

The GOLD MEDAL to A. C. Ivy, R. R. Greene and M. W. Burrill of Northwestern University Medical School, Chicago, for exhibit illustrating experimentally produced intersexuality in the rat.

The SILVER MEDAL to Hermann Sommer, Hooper Foundation, University of California Medical Center, San Francisco, for exhibit illustrating plankton and paralytic shellfish poisoning.

The BRONZE MEDAL to H. J. Corper, National Jewish Hospital, Research Department, Denver, for exhibit illustrating immunity in tuberculosis; historical and experimental.

CERTIFICATES OF MERIT, Class I, are awarded to the following (alphabetically arranged):

Sherwood Moore, St. Louis, for exhibit illustrating body section radiography.

Edwin E. Osgood, University of Oregon, Portland, for exhibit illustrating culture of human marrow as an aid in the evaluation of therapeutic agents.

David J. Sandweiss, H. C. Saltzstein and A. A. Farbman, Detroit, for exhibit illustrating the relation of sex hormones to peptic ulcer.

In addition, the following exhibits are deemed worthy of honorable mention (alphabetically arranged):

That of William Osler Abbott, University of Pennsylvania, Philadelphia, and Charles G. Johnston, R. J. Noer, Grover C. Penberthy, J. C. Kenning and J. E. Lofstrom, Wayne University College of Medicine, Detroit, on acute intestinal obstruction.

That of John A. Marshall, University of California Medical Center, San Francisco, on clinical dental pathology.

CLASS II

(Awards in Class II are made for exhibits which do not exemplify purely experimental studies and which are judged on the basis of excellence of presentation.)

The GOLD MEDAL to Frank W. Konzelmann, Edward Weiss, Lawrence W. Smith, Walter I. Lillie and Edwin S. Gault,

Philadelphia, for exhibit illustrating cardiovascular-renal disease, clinical and pathologic correlation.

The SILVER MEDAL to Philip Lewin, Chicago, for exhibit illustrating newer concepts and methods of teaching orthopedic surgery.

The BRONZE MEDAL to R. J. Reitzel, S. P. Lucia, Department of Medicine, and Karl F. Meyer, Hooper Foundation for Medical Research, University of California Medical School, San Francisco, for exhibit illustrating clinical and epidemiologic demonstration of various infectious diseases.

CERTIFICATES OF MERIT, Class II, are awarded to the following (alphabetically arranged):

John O. Bower, John C. Burns and H. A. K. Mengle, Philadelphia, for exhibit illustrating comparative study of the reparative processes in the gastrointestinal mucosae following division and suture with special reference to very fine catgut sutures.

Robert A. MacArthur, Detroit, for exhibit on hematuria.

Henry W. Meyerding, Mayo Clinic, Rochester, Minn., for exhibit illustrating spondylolisthesis, an etiologic factor in backache.

Gordon B. New, F. A. Figi, F. Z. Havens and J. B. Erich, Mayo Clinic, Rochester, Minn., for exhibit illustrating deformities of the face, correction by plastic surgery.

Rudolph Skarda, University of California Medical Center, San Francisco, for exhibit illustrating anatomicosurgical preparations.

In addition, the following exhibits are deemed worthy of HONORABLE MENTION (alphabetically arranged):

That of LeRoy C. Abbott, F. C. Bost and John B. Saunders, San Francisco, on leg lengthening and fractures of the hip.

That of Albert D. Davis, San Francisco, on plastic surgery.

That of L. H. Garland and A. V. Pettit, San Francisco, on prediction of certain types of difficult labor by pelviography; an obstetric and radiologic investigation.

That of A. C. Scott, Scott and White Hospital, Temple, Texas, on mammary tumors; diagnosis and treatment.

Special citation is made of the following exhibits:

That of the Indiana State Medical Association, Bureau of Publicity and the Executive Committee, Indianapolis, on an antidote for state medicine—the preventive medical health program of the Indiana State Medical Association.

That of Elliott P. Joslin, Louis I. Dublin, Howard F. Root and Herbert H. Marks, Boston and New York, on advances in the treatment of diabetes mellitus. (Dr. Joslin has previously received a medal in the Scientific Exhibit for his work on diabetes.)

That of the Symposium on Industrial Dermatoses presented under the auspices of the Section on Dermatology and Syphilology of the American Medical Association and the United States Public Health Service.

That of the United States Navy, Medical Department, on medical equipment and practice in naval training schools, hospitals, aviation, submarines and marine corps. (The United States Navy has previously received a Special Certificate of Merit in the Scientific Exhibit on this subject.)

EDUCATIONAL CLASSIFICATION

A SPECIAL CERTIFICATE OF MERIT is awarded to the Advisory Board of Medical Specialties, Pittsburgh, for its exhibit of charts, graphs and iterature describing the work of the board.

SPECIAL EXHIBITS (SUBSIDIZED)

The Committee on Awards commends particularly the special exhibits on anesthesia and fractures sponsored by the American Medical Association.

RECOMMENDATIONS

The Committee on Awards believes that the method of correlating the Scientific Exhibit with the Scientific Assembly by the appointment of section exhibit representatives is of advantage and should be continued.

The Committee appreciates the difficulties encountered in securing proper accommodations for the Scientific Exhibit; it recommends, however, that special consideration be given to this problem in future years so that sufficient space may be available to accommodate the increasing number of physicians who visit the exhibit and so that a suitable environment may be secured which will be in keeping with the high standard of the exhibits.

The Committee believes that the American Medical Association owes a debt of gratitude to the Committee on Scientific Exhibit of the Board of Trustees, to the Advisory Committee, and to Dr. Thomas G. Hull, director of the Scientific Exhibit.

The Committee cannot commend too highly the arrangements, general and special, the efficient management, the instructiveness and the scientific as well as practical value of the exhibit. The exhibitors, in many cases at personal sacrifice, present exhibits prepared by modern methods and devices for the illustration of recent advances in the various fields of medicine.

EBEN J. CAREY, Chairman, Milwaukee.
H. C. BUMPUS JR., Pasadena.
DEAN LEWIS, Baltimore.
E. E. IRONS, Chicago.
W. WALTER WASSON, Denver.

EDITORIAL COMMENT ON THE ANNUAL SESSION

Each year the annual session of the American Medical Association stimulates numerous editorial comments in the newspapers. Following is a selection of a few from leading city publications:

HONEST MEN SPEAK WITH FRANKNESS AND SINCERITY

San Francisco Chronicle

The proceedings of the American Medical Association convention in San Francisco disclosed that the profession is in better health than might have been supposed from what some outside diagnosticians have said about it.

There has been and doubtless will continue to be lay criticism of some factors in the practice of medicine, extravagant claims and restrictions under extreme ethical codes. But what the lay critics have had to say upon such subjects seems almost flattering by comparison with what the medical speakers said before the convention gatherings.

These men were doctors, speaking to doctors. They lashed their fellow practitioners and themselves no less for offenses which, reduced to essentials, mean little more than that the doctors are not superhuman.

Frankly and with admirable sincerity they discussed problems of their profession, deficiencies in the sum of medical knowledge, the pursuits of vain hopes that experience has proved to be vain. And as they spoke their fellow physicians listened with respect and attention.

It was a demonstration of honesty and high purpose that would be difficult to any except a gathering of medical men. Such self accusations from a political convention or a gathering of almost any other vocational or avocational group would be unthinkable. Yet the reporters covering these meetings heard men of high professional standing discuss openly, and without imposing any seal of confidence, subjects which would put any other group on the defensive.

When men dedicated to so lofty a duty come down off the pedestal to speak as frankly and sincerely as did the doctors at the convention, they justify the confidence that millions place in them. They disclose that their professional activity is vigorous and determined to go forward into the battle for humanity, in which they confess their present advance has been a series of skirmishes with mysterious and malignant enemies.

CONSERVATIVE MEDICINE

The Philadelphia Evening Ledger.

It has been claimed that only the conservatism of organized medical men is opposed to national health insurance and socialized medical services. But criticism of the American Medical Association is likely to be loudest from those who, for various reasons, are not its members. Ambitious young doctors with insufficient practices may resent the caution and conservatism of their elders. Others believe, or hope, that a system of socialized medicine would give them better and more profitable opportunities than private practice.

The A. M. A. has not weakened much in its opposition to federal control of the medical care of the American people. Its house of delegates at the association's meetings in San Francisco rejected a number of resolutions which, in effect, challenged the policy of the association in respect to socialized medicine.

That policy was reaffirmed. Its essentials are that the association is opposed to governmental or lay bodies taking over the administration of medical care under any plan, and that the medical profession does not admit that the needs of the nation for low-cost or tax-paid medical services are accurately known.

It would be dangerous, without doubt, for the nation's health and medical care to be placed in political hands. Arguments for socialized medicine, for the most part, are based on an assumption that the medical profession in America is in some degree a racket, its members more concerned for their fees than for the public welfare. None of this has been proved. The A. M. A. wisely insists that until the true facts are known the medical profession deserves, at least, the benefit of the doubt, and that it would be sheer folly to embark on a program of socialized medicine without a much more thorough study of the problem than has so far been made.

"NEW DEAL" IN MEDICINE

Indianapolis Star

The New Deal reformers apparently are insistent on undermining the work of the medical profession in their crusade to impose a mass of socialistic theories on the country. A strange note has been injected into the convention of the American Medical Association at San Francisco by those who seek to dominate the avenues through which federal paternalism can destroy the tradition of individual initiative and responsibility.

Dr. Warren F. Draper, as administration spokesman, either has been deluded by governmental propaganda or else compelled to deliver its socialistic message. He is an assistant surgeon general, representing the government's interdepartmental committee to coordinate health and welfare activities. He also is a member of the medical organization's house of delegates, the governing body of the A. M. A.

The legislative group promptly declined to accept many of Dr. Draper's statements, which obviously were either exaggerated or entirely out of order in a session concerned with medical progress rather than the New Deal's social theories.

The administration spokesman declared that the government would act if the medical profession failed to display "progressive leadership." He added that "one third of our people are not going to remain ill fed, ill housed, ill cared for in sickness." Dr. Draper might have added that most of this one third would be eliminated automatically if American business were freed of New Deal heresies and permitted to create the jobs that destroy conditions of which he complained.

The need for lower costs of medical care is urgent, yet the medical profession cannot be accused of standpattism. It has been maintaining free clinics and offering expert service in charity cases for years. The poor housing and insufficient food of which Dr. Draper lamented so tearfully are not the responsibility of the medical profession. Both would be eliminated in large part if the New Deal were scrapped and recovery permitted to function in the place of socialistic reform.

The public should not be deceived by the alluring propaganda of state medicine, which inevitably means lower professional standards and service. It is true that the nation's organized doctors bear a major responsibility in cooperating with hospitals and institutions to reduce the cost of medical care. To be effective, these reforms must be devised by practical experts and not imposed by governmental theorists.

POVERTY AND SICKNESS

New York Times

To Miss Josephine Roche's "overwhelming central fact" that "with poverty goes not only a higher rate of sickness but a deficiency of medical care," the American Medical Association replies: "This raises the question whether the economic factor is not of greater importance than is lack of medical care in the causation of illness."

No one has ever claimed that the economic factor is not of major importance in dealing with the problem of the medically indigent. Nor has any one claimed that it was the function of organized medicine to formulate plans for better housing or improving working conditions in mines and factories and thus to raise the level of the general health. On the other hand, there is a legitimate claim on the association for plans which will bring the best medical care at the lowest possible cost, even free where necessary, to the quarter of a million women who must do without a physician's aid in childbirth, the thousands of young men and women who succumb needlessly to tuberculosis, the forty-four states that have no pneumonia control program, the infants in outlying districts who still die at a rate which is abnormally high. Thus far the association has opposed group medical service, the cooperative purchase of medical advice, health insurance of any type, some public clinics established by state health authorities, government grants to stimulate research and improve medical education; in a word, any encroachment on the traditional social and enconomic prerogatives of the private practitioner. It can fairly be said that in this respect it has failed to adapt itself to a changing social order —failed to realize that the problem of medical care is not the concern of physicians alone.

Some of the officers and leaders of the American Medical Association are to participate in the Interdepartmental Committee Conference which Miss Roche has arranged in Washington. What will be their attitude? Despite the adoption of an unpromising resolution which trusts that these official representatives "will be guided by the principles and opinions which have been repeatedly expressed by the House of Delegates," there is reason to hope that the association will assume an enlightened leadership in a movement new to this country. To fail to do this will be to invite the type of government control that it condemns and fears.

COMPULSORY IDEALISM

Baltimore Sun

Miss Josephine Roche, representing the federal government, has notified the American Medical Association that "there will be concerted public action eventually for a national health program" and that "one third of our people are not going indefinitely to remain ill fed, ill housed and ill cared for in sickness." The only question remaining, she insists, "is whether highly specialized groups, experienced and trained in ways and means of meeting human needs, are going courageously and quickly to offer all they can give in constructive and progressive leadership and help in the meeting of the vast human problems of today."

But the problem to which Miss Roche refers is but a fractional part of a larger issue. What the public as a whole and each citizen as an individual must decide is whether or not idealism can be compelled. In theory, it can. Yet it is the verdict of history that the human race never has been coerced successfully very long. Even the authority of democracy proves futile when it attempts too much. The greatest power the world ever has seen—namely, that of organized religion—was defeated when, logically enough, it endeavored to dictate to conscience.

Specifically, the medical profession is the present object of attack by those who believe that altruism can be forced. Tomorrow the lawyers or the teachers, perchance, may be commanded to socialize themselves. Sooner or later the humblest corner grocer might be driven into line. If it be fair to expropriate the physician, it certainly would be just to enslave to the state all of his contemporaries who may be possessed of "ways and means of meeting human needs." Where would the policy of subjection stop? The answer of the Communist is: Nowhere!

But does dragging down the so-called "upper" two thirds really benefit the "suppressed" and "underprivileged" one third of the population? Radicals confidently reply in the affirmative. Their more conservative neighbors are not so sure. Poverty, they argue, is not eliminated by being shared. It also might be contended that generosity ceases to be a virtue when it is prevented from being voluntary.

Only the blindest of optimists can persuade himself that "a national health program" or any authentic merit could be put into effect without the willing assistance of medical practitioners as a class. The current campaign to conscript their assistance appears to be unwise in both motivation and result. Perhaps some of its sponsors might care to remember that the average doctor already is giving his services to patients unable to pay. Under the most benign group health plan ever formulated there still would be people who could not afford expensive medical attention. The same might be said for many other luxuries, not excluding that of rest and recreation conducive to physical and mental well-being.

WHERE THE DOCTORS DO STAND

The Milwaukee Journal.

The American Medical Association is being hammered over the head editorially in some newspapers because it did not go pell-mell for state or socialized medicine in its San Francisco convention. The inference is that of a standpat organization made up of members insensible to the public need, and intent only on fee collecting.

This kind of comment makes it all the more necessary to understand where the association drew its lines, what it did and what it refused to do.

The association did not oppose a wider use of medical care. It recognized the need for a wider use and urged its realization.

The association did not dodge the problem of caring for the indigent and the borderline cases. It urged on state and county medical societies that they develop "the most accurate and complete information that will enable them . . . to maintain continuously medical care that is sufficient in amount and satisfactory in quality."

The association did not oppose group hospital insurance. It backs group hospital insurance, with proper safeguards to patient and doctor.

The association did refuse to throw the doors wide open to state medicine by indorsing some vague plan that would make the care of indigent and borderline cases, and the whole development of medicine, a burden on public treasuries, to be met by the dictatorship of bureaucracy over medical practice. If that be reaction, this country ought to be thankful for it.

What would happen if the medical men went the whole way with those advocates of state medicine who go out from Washington to make speeches at every medical convention, those doctors who are in revolt because the association will not accept European models, and those foundations with money to spend that are trying their best to fasten socialized practice on this country?

Exactly the same incompetency in regard to medical care that Harry Hopkins seems to have fastened on this country in regard to food, clothing and work—a permanent class, ever growing larger, to be provided for by the government. Do we want that? Do we want another such mistake in methods?

The association wants to keep the job within the medical profession and it thinks the state and local societies are the ones to do it. And it can be done that way. It is being done in Milwaukee County. Free care under medical decision for the truly indigent and budgeting for the borderline cases—that is, borderline cases pay what they are able to pay and no more—this plan is working out in our own area. Recent surveys have not disclosed one case of need that was not met.

Isn't that the better way? We let the doctor say whether a man is ill and needs help. The other plan would let a layman bureaucrat make the decision. Then you would have incompetency and politics mixed in, and outright graft, as they have in every European system.

This, it would seem, is the dividing line between the medical organizations and the advocates of socialized medicine.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Dr. Kress Honored.—Dr. George H. Kress, Los Angeles, newly elected secretary of the California Medical Association, was honored May 23 at a dinner of the Research Study Club and the Los Angeles Academy of Ophthalmology and Otolaryngology. The speakers included Drs. Alexander Ray Irvine, toastmaster; Harlan Shoemaker, William D. Donoher, John Mackenzie Brown, George Dock and Isaac H. Jones. Dr. Kress was presented with a traveling bag. The new activities of Dr. Kress with the state association necessitated his retirement from active practice, the state board of health, the deanship of the Los Angeles Medical Department of the University of California and the presidency of the Los Angeles County Medical Association.

Death from Rabies. — *California and Western Medicine* reports the death from rabies April 3 of a dairyman of Kings County. In March, this man noticed that one of his cows was having difficulty in swallowing. To aid the cow he placed his hand in the animal's mouth, receiving abrasions on his knuckles. The cow died that night and the laboratory gave a positive diagnosis of rabies the following day. In the afternoon treatment for rabies was instituted for the dairyman. At least twelve doses of vaccine were administered. On April 1 he had diminished reflexes, slightly stiff neck, a high temperature and was lethargic. He died April 3. At no time did he have convulsions and there was no difficulty in swallowing. Examination of the brain at Stanford University School of Medicine, San Francisco, disclosed the presence of Negri bodies, confirming the diagnosis of rabies.

FLORIDA

Society News.—The Dade County Medical Society was addressed June 7 by Drs. James L. Anderson and Ralph W. Jack, both of Miami, on "Hypoglycemic Shock Therapy" and "Diagnosis of Pregnancy" respectively.——A symposium on peptic ulcer was presented before the Duval County Medical Society June 4 by Drs. Frederick K. Herpel, West Palm Beach; Herbert L. Bryans, Pensacola, and John S. Turberville, Century.——The Pinellas County Medical Society devoted its meeting June 3 to a symposium on tuberculosis; the speakers were Drs. Arthur J. Logie, Jacksonville; Rollin D. Thompson, Orlando; Arnold S. Anderson, St. Petersburg, and William H. Pickett, Clearwater.

GEORGIA

New Cancer Clinic.—A new cancer treatment center has been organized at the new City-County Hospital, La Grange, completed last September, according to *Georgia's Health.* Dr. Enoch Callaway is the director of the clinic and Dr. Emory R. Park, associate director. Clinics will be held each Wednesday. With the opening of this clinic there are now eight regularly organized cancer treatment centers available in the state.

IDAHO

Plague Infection. — According to *Public Health Reports,* plague infection has been proved in tissue from one ground squirrel shot May 25, sixteen miles north of Lava Hot Springs, Bannock County.

Society News. — At a recent meeting of the Southwest Idaho Medical Society in Boise the speakers were Drs. Clifford D. Sweet, Oakland, on the child as a patient; Frederick Bost, San Francisco, spinal disorders, and Norman N. Epstein, San Francisco, diagnosis and treatment of syphilis. Dr. George W. Pierce, San Francisco, held two clinics on reconstructive surgery.

ILLINOIS

Society News.—Dr. Frederick R. Schmidt, Chicago, discussed common diseases of the skin before the Madison County Medical Society in Alton June 3.——The Macoupin County Medical Society was addressed in Carlinville May 24 by Drs. Robert J. Crossen and Franz J. Arzt, St. Louis, on gynecology and newer management of threatened abortion, respectively.

Chicago

Course in Electrocardiography.—A graduate course in electrocardiography will be presented at Michael Reese Hospital by Dr. Louis N. Katz, director of cardiovascular research, August 22-September 3. It is planned to individualize the course so that at the end of the period each student will be capable of taking and properly interpreting routine electrocardiograms. Additional information may be obtained from the medical librarian at the hospital, Twenty-Ninth Street and Ellis Avenue.

Endowment for Biologic Research.—The University of Chicago will receive $1,500,000 from the Rockefeller Foundation for research in the biologic sciences, provided an additional sum of $500,000 can be obtained from outside sources before June 30, 1941. During the next three years the foundation will provide $180,000 at the rate of not more than $60,000 a year for biologic research. This grant has been made so that the equivalent of the income of the capital sum of $1,500,000 will be available to the university during the period allowed for raising the sum of $500,000. Should the university secure the funds in a shorter period, the temporary annual grants will be canceled. The foundation has provided grants for the support of basic laboratory research in fundamental biologic problems since 1929 and the new endowment will support this work permanently on a larger scale.

INDIANA

University News.—Miss Ruth J. McNutt, former secretary to William Lowe Bryan, LL.D., president, Indiana University, succeeded Allan Hendricks July 1 as librarian at the Indiana University School of Medicine, Indianapolis. She will serve also as library coordinator for the four libraries at the medical and dental schools, for the social service department and at the extension center.

Society News.—Dr. William M. Doughty, Cincinnati, discussed "Cancer of Oral Tissues" before the Dearborn-Ohio County Medical Society in Lawrenceburg recently.——At a meeting of the Jasper-Newton County Medical Society in Morocco recently Dr. James H. Hawk, Indianapolis, spoke on puerperal infection.——The Monroe County Medical Society was addressed in Bloomington May 9 by Dr. William C. MacCarty, Rochester, Minn., on "Cancer and Cancer Control."

Typhoid Outbreak in Bus Passengers. — Contaminated drinking water from a well near Angola, used by passengers of a bus line, has been found to be responsible for at least fifty-two cases of typhoid with six deaths in Indiana and several other states, according to *Public Health Reports* June 17. Cases in persons giving a history of having stopped off at Angola for meals when traveling by bus during the early part of April have been reported from Ohio, New York and Illinois, and two cases in California have been traced to this source. *Public Health Reports* suggests that other states have probably had recent isolated cases of typhoid of undetermined origin which are also attributable to this source. The onset of the majority of cases was in April; use of the water was stopped by the health officer the latter part of April.

KANSAS

Society News.—The Wyandotte County Medical Society was addressed in Kansas City May 3 by Drs. Eldon S. Miller on "Relation of Coronary Heart Disease and Diabetes Mellitus" and Don C. Peete, "Post Influenza Myocarditis." Dr. Carl O. Rice, Minneapolis, discussed "Injection Treatment of Hernia" before the society recently.——Dr. Elmer L. Sevringhaus, Madison, Wis., addressed the Shawnee County Medical Society in Topeka June 6 on "Endocrine Therapy in General Practice."

KENTUCKY

Personal.—Dr. Clarence E. Bird has resigned as professor and head of the department of surgery at the University of Louisville School of Medicine, effective August 1. He plans to practice in Providence, R. I., according to the Harvard Medical Alumni *Bulletin*.

Regional Meeting.—The sixty-ninth annual meeting of the Southwestern Kentucky Medical Association was held recently in Paducah with the following speakers: Drs. Daniel L. Sexton, St. Louis, on "Endocrinology in General Practice"; Ralph L. Cook, St. Louis, "Upper Respiratory Infections in Children"; Euclid M. Smith, Hot Springs National Park, Ark., "Management of the More Common Arthritic Disorders"; William G. Johnson, Louisville, "Endocrine Glands and Organotherapy," and Silas H. Starr, Louisville, "Postpartum Hemorrhage." Dr. Morton W. Haws, Fulton, was elected president.

LOUISIANA

Society News. — At the third annual meeting of the Louisiana-Mississippi Ophthalmological and Otolaryngological Society in New Orleans recently the guest speakers were Drs. Albert L. Brown, Cincinnati, on "Affections of the Paranasal Sinuses Involving the Optic Nerve" and Arthur M. Alden, St. Louis, "Deep Neck Infections." Officers are Drs. Francis E. Le Jeune, New Orleans, president; Daniel C. Montgomery, Greenville, vice president, and Edley H. Jones, Vicksburg, secretary. The next annual session of the society will be held in Gulfport.

MICHIGAN

The Henry Russel Award.—Dr. Franklin D. Johnston, assistant professor of internal medicine, University of Michigan Medical School, Ann Arbor, was presented May 3 with the Henry Russel award for 1938 by the university for his accomplishments and promise in medical research and teaching. Dr. Johnston graduated from the University of Michigan as an electrical engineer in 1922 but became interested in medicine when he became the first patient in diabetic coma to be treated with insulin at the University Hospital, it was reported. He graduated at the medical school in 1929.

MINNESOTA

Personal. — Dr. Demeter Kalinoff, for thirty-six years a practicing physician in Stillwater, was named to the Stillwater Hall of Fame at the annual Hall of Fame banquet recently, in recognition of "his charity, generosity and kindliness in his practice among the people of Stillwater."

Society News.—Dr. Owen H. Wangensteen, Minneapolis, delivered the presidential address before the Minnesota Pathological Society May 17 on "Physiologic and Pathologic Aspects of Therapeutic Problems in Obstruction of the Bowel."—— Mr. A. G. Stasel, Minneapolis, was chosen president-elect of the Minnesota Hospital Association at its annual convention in Minneapolis May 21 and Dr. Peter D. Ward, superintendent of the Miller Hospital, St. Paul, was installed as president.

MISSOURI

Symposium on Cancer.—The St. Louis Medical Society was addressed recently by Drs. Frederick J. Taussig on "Present Possibilities and Future Expectations in Cancer Therapy"; Leo Loeb, "The Causes of Cancer," and Axel N. Arneson, "Fundamental Principles Underlying Radiation Therapy." Dr. Frederick W. Broderick, Bournemouth, England, discussed "The Fundamental Factor in Etiology" before a recent joint meeting of the St. Louis medical and dental societies.

New Health Districts.—The following have been placed in charge of the recently formed district health units:

Dr. Theodore L. Waddle, Dexter, district 2, consisting of Stoddard, Scott, New Madrid and Mississippi counties.

Dr. Will H. Aufranc, Kennett, district 3, consisting of Pemiscot and Dunklin counties.

Dr. Enoch M. Bryan, Fredericktown, district 4, consisting of Butler, Wayne, Bollinger, Cape Girardeau, Perry, St. Genevieve, Madison, Iron and Washington counties.

Dr. Charles W. Meinershagen, Salem, district 5, consisting of Howell, Oregon, Ripley, Carter, Reynolds, Shannon, Texas, Dent, Pulaski, Phelps and Crawford counties.

Dr. Henry H. Asher, Ozark, district unit 6, consisting of Barton, Jasper, Newton, McDonald, Dade, Lawrence, Barry, Stone, Christian, Taney, Ozark, Douglas, Webster and Wright counties.

Dr. Robert D. Wright, Osceola, district 7, consisting of Bates, Vernon, Henry, St. Clair, Cedar, Benton, Hickory, Polk, Morgan, Camden, Dallas and Laclede counties.

Some counties are continuing as independent units; that is, financed by the local authorities, and other district units have been formed but are not yet in operation.

NEW YORK

Society News.—Dr. Ward H. Cook, bureau of laboratories, department of public health, Yonkers, was chosen president of the New York State Association of Public Health Laboratories at its annual meeting in Cooperstown May 23. Dr. Gilbert J. Dalldorf, Grasslands Hospital Laboratory, Valhalla, and Mary B. Kirkbride, Sc.D., state laboratory, Albany, were elected vice president and secretary, respectively.——Dr. Louis A. Siegel, Buffalo, addressed the Medical Society of the County of Niagara June 14 on endocrine therapy.

Faculty Promotions at Syracuse.—The board of trustees of Syracuse University recently approved the following promotions in the school of medicine:

Dr. John G. Fred Hiss to be professor of clinical medicine.
Dr. Maynard E. Holmes, professor of clinical medicine.
Dr. Eugene N. Boudreau, professor of clinical medicine (neurology).
Dr. Jacob J. Levy, associate professor of medicine in physical therapy.
Neal E. Artz, Ph.D., associate professor of physiologic chemistry.
Dr. Lee A. Hadley, assistant professor of medicine in physical therapy.
Dr. Noble R. Chambers, assistant professor of medicine (neurology).
Dr. Bertram S. Levinson, assistant professor of clinical medicine.
Dr. Charles George Murdock Jr., assistant professor of clinical pediatrics.
Dr. Mary F. Brew, associate professor of psychiatry.
Dr. Eugene Davidoff, assistant professor of psychiatry.

New York City

Display of Medical Military Memorabilia.—St. Luke's Hospital presented an exhibit in June of medical materials and other relics associated with the war services of members of its board of managers, medical officers and nursing staff. The display included original pictures, portraits, documents, photographs and war relics illustrating military surgery at the front, at base hospitals, ambulance and Red Cross work and in the navy on sea and shore. The hospital was represented in active World War service by more than 70 per cent of its medical staff.

Dr. Carrel Announces Retirement.—Dr. Alexis Carrel, member of the Rockefeller Institute for Medical Research, having reached the retirement age of 65, has announced that his work at the institute will be halted, his division closed and his staff disbanded July 1, 1939, according to the New York *Times*. Dr. Carrel was born in Sainte Foy les Lyon, France, June 28, 1873. He received his degree in medicine at the University of Lyon in 1900; he served as professor at his alma mater until 1902, came to the United States in 1905, and joined the staff of the Rockefeller Institute for Medical Research in 1906. In 1912 he was awarded the Nobel Prize in Medicine for success in suturing blood vessels and transplantation of organs. This was the first time the prize in medicine had been awarded in the United States. Dr. Carrel won the Dr. Sofie Nordhoff-Jung Cancer Prize in 1931 and received the eighth Cardinal Newman Award of the Newman Foundation in 1937. He is an Associate Fellow of the American Medical Association.

NORTH CAROLINA

Officers of the State Medical Board.—Dr. Lewis W. Elias, Asheville, was elected president of the state board of medical examiners at a meeting June 13 in Raleigh, and Dr. William D. James, Hamlet, was elected secretary. An entire new board was elected at the meeting of the Medical Society of the State of North Carolina in May, to serve for six years.

Society News.—At a meeting of the medical societies of Rutherford, Polk, McDowell and Cleveland counties in Rutherfordton recently, the name Thermal Belt Medical Society was adopted.——Dr. Arthur L. Daughtridge, Rocky Mount, was elected president of the North Carolina Radiological Society at its recent meeting in Pinehurst and Dr. Major I. Fleming, Rocky Mount, was reelected secretary.

Personal.—Dr. James R. Rogers, Raleigh, was honored at a meeting of the Raleigh Academy of Medicine June 10 as its oldest member. Dr. Rogers has been in active practice more than fifty years.——Dr. J. Roy Norton, assistant director of county health work on the staff of the state health department, Raleigh, has been made assistant director of the division of preventive medicine.——Dr. John S. Anderson, New Bern, health officer of Craven County, has resigned to become health officer of Cabarrus County. He succeeds Dr. Daniel G. Caldwell, Concord, who resigned because of ill health.——Dr. Wingate M. Johnson, Winston-Salem, has been elected president of the board of trustees of Wake Forest College.

OHIO

Health Survey in Toledo.—Carl E. Buck, Dr.P.H., field director, American Public Health Association, is conducting a public health survey of Toledo at the request of the Toledo Academy of Medicine. The purpose of the study is to determine the extent to which Toledo agencies are providing adequate health protection service and to recommend means by which various activities may be coordinated and the program improved.

Fifty Years of Practice.—The Mahoning County Medical Society held a testimonial dinner in honor of Dr. Harmon E. Blott, Youngstown, May 17, in recognition of his completion of fifty years in the practice of medicine and made him an honorary member of the society. Dr. Blott graduated at Western Reserve University School of Medicine, Cleveland, in 1888. Dr. Paul D. White, Boston, was the speaker at the scientific meeting of the society.

OKLAHOMA

Changes in the Faculty at Oklahoma.—The title of emeritus professor was conferred by the University of Oklahoma School of Medicine, Oklahoma City, on Drs. Edmund S. Ferguson, professor of ophthalmology; William M. Taylor, professor of pediatrics, and John F. Kuhn, professor of gynecology, it has been announced. Dr. Leslie M. Westfall, professor of clinical ophthalmology, has been appointed to succeed Dr. Ferguson as professor and head of the department of ophthalmology; Dr. Clark H. Hall, associate professor of pediatrics, will succeed Dr. Taylor as professor and head of the department of pediatrics, and Dr. Grider Penick, associate professor of gynecology, will become professor and head of the department of gynecology, succeeding Dr. Kuhn. The appointments are effective September 1.

OREGON

Society News.—The Lincoln County Medical Society was recently organized with Drs. Wilfred S. Thurtell, Newport, as president and Orley N. Callender, Toledo, as secretary.——Dr. Ralph A. Fenton, Portland, addressed the Central Willamette Medical Society, Corvallis, in May on "Hoarseness from the Standpoint of the General Practitioner."——The annual meeting of the Southern Oregon Medical Society was held at Oregon Caves in May with Grants Pass physicians as hosts. The guest speakers were the following Portland physicians: Drs. Otis F. Akin, on "Fractures and Dislocations of the Cervical Vertebrae"; Laurence Selling, "Herniation of the Intervertebral Disks," and Homer P. Rush, "Sex Hormones." Dr. Charles T. Sweeney, Medford, president of the Oregon State Medical Society, and Mr. Clyde Foley, executive secretary of the state society, discussed organization activities. Dr. Albert F. Walter Kresse, Medford, was elected president.

PENNSYLVANIA

Society News.—Drs. Walter F. Donaldson, Pittsburgh, and James H. Corwin, Washington, addressed the Westmoreland County Medical Society at the Mountain View Hotel near Greensburg June 21 on "Medical Service—Today and Tomorrow" and "Medical Service Survey" respectively.

Personal.—Dr. Richard Weissenberg, formerly professor extraordinarius of anatomy, University of Berlin, has been appointed a fellow at the Wistar Institute of Anatomy and Biology and will undertake research at the Effingham B. Morris Biological Farm, Bristol, according to *Science*. Dr. Weissenberg served as visiting professor of cytology at Washington University School of Medicine, St. Louis, last year.

Philadelphia

New Medical Director at Jefferson Hospital.—Dr. Robert Bruce Nye, director of the Curtis Clinic at Jefferson Medical College Hospital, has been appointed medical director of the hospital. He succeeds Dr. Henry K. Mohler, who was recently appointed dean of the medical college. Dr. Nye graduated from Jefferson in 1927 and has been director of the Curtis Clinic since it was opened in 1931.

Portrait of Dr. Anspach.—The graduating class of 1938 at Jefferson Medical College presented to the college April 21 a portrait of Dr. Brooke M. Anspach, professor of gynecology. A native of Reading, Pa., Dr. Anspach graduated at the University of Pennsylvania School of Medicine in 1897. He served at his alma mater as associate in gynecology until 1921, when he became professor at Jefferson. He is a former president of the American Gynecological Society. The senior class also presented a plaque to the college April 27 commemorating the services of the late Dr. Michael A. Burns, professor of neurology.

Pittsburgh

Society News.—The Allegheny County Medical Society was addressed June 21 by Drs. Joseph W. Hampsey on "Allergic Rhinitis: Use of Nasal Smears as an Aid in Diagnosis"; Simon H. Ratner, "Tuberculosis of the Larynx"; John P. Henry, "Treatment of Varicose Veins and Leg Ulcers," and Cleophas E. Poellot, Woodville, Pa., "Lest We Forget—The Intellect."——The Pittsburgh Surgical Society was addressed June 17 by Drs. John Shelton Horsley, Richmond, Va., on "Appendicitis—Recent Improvements in Treatment" and Donald W. G. Murray, Toronto, Canada, "Heparin in the Treatment

of Postoperative Thrombosis."——Dr. Walter T. Dannreuther, New York, discussed "Supravaginal Hysterectomy—A Review of 535 Personal Cases" before the Pittsburgh Obstetrical and Gynecological Society May 14.——At a meeting of the Pittsburgh Ophthalmological Society, May 23, Dr. Stuart N. Rowe spoke on "Changes in the Eyes Resulting from Intracranial Mass Lesions."

RHODE ISLAND

Society News. — Dr. Walter C. Rocheleau, Woonsocket, president, state medical society, addressed a recent meeting of the Pawtucket Medical Association in Pawtucket on health insurance.——A symposium on hypertension and albuminuria in pregnancy was presented before the Providence Medical Association in Providence May 2; the speakers were Drs. Foster S. Kellogg, Duncan E. Reid and Harold M. Teel.

Executive Secretary Appointed.—Mr. John E. Farrell, graduate manager of athletics at Providence College for the past twelve years, has been appointed full time executive secretary of the Providence Medical Association. Mr. Farrell was graduated from Providence College and has taken graduate courses at Harvard and Boston universities. He has been engaged in newspaper and publicity work and recently initiated a course in journalism at Providence College.

TENNESSEE

Promotions at Vanderbilt.—The board of trustees of Vanderbilt University, Nashville, recently approved the following promotions in the school of medicine:

Dr. Samuel M. Bloomstein to be professor of clinical pediatrics.
Dr. Leonard W. Edwards, associate professor of clinical surgery.
Dr. Rudolph H. Kampmeier, associate professor of medicine.
Dr. Ralph M. Larsen, assistant professor of surgery and anatomy.
Dr. Guy Sydney McClellan, assistant professor of obstetrics and gynecology.

Annual Regional Meeting.—Dr. John Jackson, Dyer, was elected president of the West Tennessee Medical and Surgical Association at its forty-seventh annual session in Jackson May 26. Among the speakers were Drs. Milton S. Lewis, Nashville, on "Factors That Influence Neonatal Mortality"; Edwin J. Lipscomb, Memphis, "Fractures of the Humerus Involving the Shoulder Joint," and Arthur F. Cooper, Memphis, "Some Phases of State Medicine."

TEXAS

Society News. — Dr. Bernard H. Bayer addressed the Harris County Medical Society, Houston, recently on "Fractures of the Skull—A Study of 200 Cases."——Drs. Harry R. Levy and James H. Herndon addressed the Dallas County Medical Society May 26 on "Appendicitis, Differential Diagnosis and Treatment" and "Diagnosis in Therapy of Brucellosis" respectively.——The annual premedical banquet sponsored by the University of Texas chapter of Alpha Epsilon Delta, honorary premedical fraternity, was recently held in Austin, with Dr. Edward H. Cary, Dallas, as toastmaster. Students and faculty members from forty colleges and universities in Texas were invited. Among the speakers were Drs. Ernst W. Bertner, Houston, president-elect of the Texas State Medical Association; William S. Carter, Galveston, dean, University of Texas School of Medicine; Walter H. Moursund, Dallas, dean of Baylor University Medical School, and Kenneth H. Aynesworth, Waco, a regent of the university.—— At a meeting of the Denton County Medical Society recently in Denton, the speakers were Drs. John M. Pace, Dallas, on "Transurethral Prostatic Resection" and Frank A. Selecman, Dallas, "Peritonitis."——The Hardin-Tyler Counties Medical Society was addressed in Kountze recently by Drs. Harold L. D. Kirkham and Joseph R. Theriot Jr., both of Houston, on skin grafting and emergencies in abdominal surgery, respectively.——Among others, Dr. William S. Webb, Fort Worth, discussed "Cataract Surgery" before the Tarrant County Medical Society recently.

VIRGINIA

New Rural Health Director. — Dr. Lonsdale J. Roper, recently associate director of the venereal disease program of the state health department, Richmond, has been made director of rural health for the department, succeeding Dr. Charles Howe Eller. Dr. Roper was for several years director of the department of public welfare in Portsmouth.

Mental Hygiene Advisory Board.—The following appointments to the state advisory board on mental hygiene have been announced: Drs. Joseph S. DeJarnette, superintendent of the Western State Hospital, Staunton; Joseph Blalock, superintendent of the Southwestern State Hospital, Marion; Oscar B. Darden, Westbrook Sanatorium, Richmond. Reappointed members are Drs. Hugh C. Henry, Petersburg; George W. Brown, Williamsburg; Harvie DeJ. Coghill, Robert Finley Gayle Jr., Howard R. Masters and James Asa Shield, all from Richmond.

Joint Psychiatric Meeting.—The North Carolina Neuropsychiatric Association met with the Virginia Neuropsychiatric Society recently at the Westbrook Sanatorium, Richmond. The speakers were Drs. Bronson Crothers, Boston, on "A Pediatrician in Search of Mental Hygiene"; Maurice Barnes Woodhall, Durham, N. C., "Encephalography in the Diagnosis of Posttraumatic Psychosis and Other Sequelae of Acute Head Injuries"; Elbert A. MacMillan, Winston-Salem, "Hystero-Epilepsy" and Roy H. Long, Morganton, "A Preliminary Report on the Use of Metrazol in the Treatment of the Psychotic."

WASHINGTON

Health Institute.—Medical and civic authorities cooperated in holding a health institute in Spokane recently to acquaint the public with developments in medicine and to present a brief study of some important diseases.

Society News.—Dr. Ross E. McPhail, Lakeview, addressed the Grays Harbor County Medical Society, Elma, May 18, on "Indications and Contraindications for Thoracotomy."—— Drs. Hale A. Haven and Louis H. Edmunds, Seattle, addressed the Yakima Valley Medical Society in Yakima recently on brain tumors and injuries to the knee, respectively.—— Dr. Charles P. Wilson, Portland, addressed the Walla Walla Valley Medical Society at its final meeting of the season in Walla Walla May 12 on rheumatic diseases. Dr. Carl J. Johannesson was elected president.

Graduate Course at State University. — The twenty-second annual graduate medical course will be presented at the University of Washington, Seattle, July 18-22. The lecturers will be Drs. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore; Mynie G. Peterman, professor of pediatrics, Marquette University School of Medicine, Milwaukee; Frederick H. Falls, professor of obstetrics and gynecology, University of Illinois College of Medicine, Chicago, and Leo G. Rigler, professor of radiology, University of Minnesota Medical School, Minneapolis.

WEST VIRGINIA

Society News.—Dr. Russell B. Bailey, Wheeling, discussed "Lobectomy for Lung Abscess" before the Logan County Medical Society recently.——At a meeting of the Monongalia County Medical Society in Morgantown recently Dr. William B. Morrison, Columbus, spoke on "Recognition of Protein Efficiency in the Treatment of Carcinoma of the Stomach." ——Dr. Frank N. Wilson, Ann Arbor, Mich., addressed the Ohio County Medical Society recently on cardiac pain. Dr. William James Gardner, Cleveland, addressed the society May 6 on "Surgical Lesions of the Cranial Nerves."

GENERAL

Special Society Election.—Dr. McIver Woody, New York, was chosen president-elect of the American Association of Industrial Physicians and Surgeons at its annual meeting in Chicago June 10 and Dr. Clarence D. Selby, Detroit, was installed as president. Other officers are Drs. Daniel L. Lynch, Boston; Lloyd Noland, Birmingham, Ala., vice presidents, and Volney S. Cheney, Chicago, secretary.

Examination by Board of Dermatology.—If the number of candidates warrants it, the American Board of Dermatology and Syphilology will hold an examination Friday and Saturday, November 11-12, before the meeting of the American Academy of Dermatology and Syphilology in St. Louis. Should an examination be held, the latest date for receipt of applications of class B would be September 1 and of class A October 1. Further information may be obtained from the secretary, Dr. Clarence Guy Lane, 416 Marlboro Street, Boston.

Fraudulent Salesman.—Wisconsin physicians have recently reported the activities of one John Bowles, who claimed to represent the Professional Circulation Company of New York and took orders for magazines and books which the physicians never received. It is reported that Bowles was discharged by the National Medical Book Company several months ago and that firm is trying to locate him for fraudulent actions. Bowles is 5 feet 10 inches tall, wears a mustache and has dark wavy hair, blue eyes and deep lines in his face. He speaks with a slight Southern accent and was at one time a practicing dentist.

Bibliography of Medical Aeronautics.—A bibliography of aeronautical medicine, which lists book and pamphlets dealing with the medical aspects of flying, has been compiled as a part

of a Works Progress Administration project. It includes treatises by English, French, German, Italian and other foreign authors. The effects of flying on the cardiovascular system, the eye, ear, nose and throat, and the effects of altitude, parachute jumping, wind, cold and speed on the various organs and the entire system are covered in the compilation, as are fatigue and staleness, hygiene, nervous system, pathology, physical qualification, psychologic aspects, psychophysiologic aspects, sanitary aviation, accidents, air sickness, airplane ambulances and carbon monoxide poisoning. John R. Palmer, managing project supervisor, U. S. Works Progress Administration, 5111 R. C. A. Building, New York, is handling correspondence relating to the bibliography. The Institute of Aeronautical Sciences announces it will appreciate receiving additional references, corrections and criticism.

Payment of Blood Donor.—The United States Code provides that when there is filed in the General Accounting Office a claim against the United States that may not lawfully be adjusted by the use of an appropriation theretofore made, but which claim, in the judgment of the Comptroller General of the United States, contains such elements of legal liability or equity as to be deserving of the consideration of the Congress, the Comptroller General shall submit the claim to the Congress by a special report containing the facts and his recommendation thereon. The furnishing of blood for transfusion to a patient in a Veterans' Administration Facility by a salaried civilian employee of the federal government, with full knowledge that under the law and regulations of the Veterans' Administration he was not entitled to payment therefor, does not involve, in the judgment of the General Accounting Office, such elements of legal liability or equity as would justify that office in reporting it to the Congress with a recommendation that compensation be paid for the service rendered.

One Million to Infantile Paralysis Foundation.—Mr. Basil O'Connor, New York, president of the National Foundation for Infantile Paralysis, in a letter addressed to President Roosevelt June 21 announced the appointment of a general advisory committee and four subcommittees to advise the foundation on the allotment of its funds. At that time Mr. Keith Morgan, New York, chairman of the Committee for Celebration of the President's Birthday, presented to the President a check for $1,010,000 as the principal instalment of the funds raised in the 1938 celebrations. It is expected that about $50,000 more will be added when the auditor's report is completed. The general committee has the following members:

Dr. Irvin Abell, Louisville, Ky., President of the American Medical Association.
Dr. Philip Lewin, associate professor of orthopedic surgery, Northwestern University Medical School, Chicago.
Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C.
Dr. Max Minor Peet, professor of surgery, University of Michigan Medical School, Ann Arbor.
Dr. Thomas M. Rivers, director, Hospital of the Rockefeller Institute for Medical Research, New York.

Dr. Rivers is chairman of the subcommittee on scientific research, of which the members are Dr. Donald B. Armstrong, Metropolitan Life Insurance Company, New York; Dr. George W. McCoy, U. S. Public Health Service, Washington, D. C., and Karl F. Meyer, Ph.D., Hooper Foundation, University of California, San Francisco. Dr. Parran heads a committee on public health which will give aid in time of epidemics; members are Drs. Don W. Gudakunst, state health officer of Michigan, Lansing, and George H. Ramsey, health commissioner of Westchester County, White Plains, N. Y. Dr. Peet is chairman of a committee on education with Dr. Abell and Dr. Morris Fishbein, Editor of THE JOURNAL, Chicago, as the other members. Dr. Lewin is chairman of a committee on treatment of after-effects; other members are Drs. George E. Bennett, associate professor of orthopedic surgery, Johns Hopkins University School of Medicine, Baltimore; Charles Leroy Lowman, Los Angeles Orthopedic Hospital, Los Angeles; Leo Mayer, associate professor of clinical orthopedic surgery, Columbia University New York Post-Graduate Medical School, New York, and Frank R. Ober, assistant dean and clinical professor of orthopedic surgery, Harvard University Medical School, Boston. The foundation has adopted the policy of assisting in study and research on the medical problem as a whole and not of giving individual care for those afflicted. It is felt that the problem of locating crippled children and providing medical, surgical, corrective and other services and care and facilities for diagnosis, hospitalization and after-care of the individual case is essentially a local problem and that the foundation must confine itself to aiding institutions and centers in which methods or procedures may be developed which will be of benefit to all the afflicted.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 11, 1938.

A Criticism of Tonsillectomy

At the Royal Society of Medicine Dr. J. Alison Glover, medical officer of the ministry of health, read a paper on the incidence of tonsillectomy in school children, in which he said that the rise in the incidence of tonsillectomy was one of the major phenomena of modern medicine. It had been estimated that 200,000 tonsillectomies were performed annually in this country and that the operation accounted for a third of all the operations with general anesthesia performed in the United States. About 1902 a rapid rise took place in the number of tonsillectomies performed in England. The period of highest incidence was at the ages of from 5 to 7 years, a time of great change in the oral cavity and in the general development of the child. Was it not possible that many of the operations performed at this period removed tonsils which were enlarged physiologically or in immunologic response to the unaccustomed herd infections of school life or to the sepsis from decay of the primary dentition? Might not some of the improvement attributed to the operation be due to physiologic changes which normally took place at this period? A study of the operation rates in different localities of this country showed wide variations but no correlation with such factors as overcrowding, poverty, bad housing or climate. The distribution defied any explanation save that of medical opinion on the indications for operation. Large and in some cases drastic reductions in the number of operations performed on elementary school children in certain areas had no unsatisfactory results. The social distribution was yet more of an enigma; tonsillectomy was at least three times as common in the well-to-do classes. The better the opportunity for careful nurture, the more the child was liable to tonsillectomy. In the public schools picked athletes had been tonsillectomized in the same proportion as other boys.

Though tonsillectomy was always something of a gamble, in certain cases it gave brilliant results. Unfortunately the recollection of these often led to operation without adequate cause or sufficient regard to the possibility of the enlargement being temporary, physiologic or immunologic. Mr. T. B. Layton, surgeon to the throat department, Guy's Hospital, had pointed out that the mortality of the operation was higher than was generally appreciated. Dr. Glover concluded by quoting from the recent report of the schools epidemic committee of the Medical Research Council: "It is a little difficult to believe that among the mass of tonsillectomies performed today all subjects for operation are selected with true discrimination, and one cannot avoid the conclusion that there is a tendency for the operation to be performed as a routine prophylactic ritual for no particular reason and with no particular result."

In the discussion there was general agreement with Dr. Glover's views. Mr. T. B. Layton said that he first adopted a conservative attitude in 1911, which further experience had strengthened. He refused to admit that the function of the tonsil was unknown; it was the largest and most important of the protective subepithelial lymphatic glands. If a person had three attacks of tonsillitis which seemed to be due to organisms residing in the tonsils he would not admit that tonsillectomy was a gamble, but otherwise he did not think that one could ever be certain that it was productive of good results. Irreparable harm could be done by removing the lymphoid tissue of children living under bad hygienic conditions.

Preventable Foot Trouble

A resolution was passed by the West Sussex Division of the British Medical Association asking that the attention of the minister of health be drawn to the large amount of preventable

foot trouble caused by the wearing of ill shaped shoes. This in turn came before the public health committee of the association and led to some discussion. It was agreed that there was good ground for some action, and one or two members urged, especially in view of the national campaign for physical fitness, that a considered and authoritative report be drawn up pointing out the damage done to the feet from the cause indicated, and that such a report should have all the publicity possible. But some cynics on the committee expressed doubt as to whether women in particular could ever be persuaded to wear proper and hygienic shoes. They did not want them, one member declared, and preferred high heels and the pattern generally worn as being really more comfortable. The opinion had been expressed in the *British Medical Journal* that it was erroneous to suppose that the shoe with the high heel had any pernicious effect and that it was rather an advantage. But the general feeling of the committee was that something ought to be done in the way of compiling a considered report. It was mentioned that through the action of the medical profession in years gone by tight lacing had disappeared. In some districts already, where there were special foot clinics, action had been taken to deal with the problem of proper footwear. Ultimately it was decided to refer the subject to the science committee of the British Medical Association.

The Use of Radium

In the eighth annual report of the National Radium Trust and Radium Commission for 1936-1937 it is stated that the outlook of surgery is rapidly altering with regard to those sites in which radiotherapy has a field of application. The previous practice of routine operation with radiotherapy as a reserve for recurrences has been virtually abandoned in the best centers. Schemes of treatment are evolved after consultation between the surgeon or laryngologist and the roentgen ray or radium therapist before anything is done. In this treatment each member of the team works on a settled plan with great advantage. The commission holds that to secure a reasonable standard of service for the treatment of cancer throughout the country the whole problem should be attacked by the government along national lines, for in only a proportion of cases suitable for radiotherapy is it being received. Every step should be taken to encourage persons suffering from or suspected to be suffering from cancer to resort to treatment at the earliest possible moment. The work done at the national centers is good but does not cover the whole country; new centers and the expansion of the existing ones are necessary.

THE DANGER OF IRRADIATING PRECANCEROUS GROWTHS

It is apt to be forgotten that radiation may produce as well as cure cancer. In the report of the pathologic research department of the Radium Institute further investigations into the treatment of precancerous lesions are reported. It had already been demonstrated that when from 4,000 to 8,000 roentgens is applied to a precancerous lesion of the skin in mice, produced by painting with tar, the onset of malignancy is delayed or even inhibited. Investigations have now shown that smaller doses, from 160 to 1,440 roentgens, increase instead of inhibiting malignancy. This indicates a serious danger in treating precancerous lesions by radiation. No doubt good results would follow if the whole lesion was given a dose of about 6,000 roentgens, but if the lesion was given a smaller dose or if any part of it received a smaller dose there would be a danger of producing cancer. During the summer it was observed that mice painted with carcinogenic agents, such as tar, shale oil or benzpyrene, when placed in the sun showed signs within a few minutes of being burned by it. Further investigation showed that these agents had sensitized the skin to light and that this action was a common property of carcinogenic agents.

Air Raid Precautions in Factories

All possible precautions are being taken in this country against the horrors of the latest development of "civilized warfare." At a meeting of the Association of Industrial Medical Officers Dr. N. W. Hammer, medical officer to the air raids precaution department of the government, said that factories should prepare plans to deal with their own special conditions, within the scheme of the local authorities for dealing with air raids. First aid parties in a factory should consist of three men, and the proportion should be two parties for 250 men, with an additional party for each additional 250 men or part thereof. The first aid parties should work with rescue parties ready to give aid before sending the victim to the first aid post or hospital. The members should be trained to relieve suffering and to save life, if the need arises, by arresting urgent hemorrhage or treating asphyxia from electrocution. A factory of any size should make provision for the reception and treatment of those injured in an air raid as a preliminary to their being sent home or to a hospital. The factory should also provide for the cleansing of the uninjured and contaminated. It might be well to have a medical officer at the first aid post to give interim treatment, including transfusions.

The Supply of Synthetic Drugs in Wartime

In the House of Commons a member asked the government whether their attention had been drawn to the fact that in war the British Empire would be without important chemical compounds of which Germany had a practical monopoly. The minister concerned replied that they were well aware that the discovery of new chemical compounds of certain kinds, particularly those used in the treatment of tropical and some other diseases, at present depends largely on research work undertaken by German industrial concerns. For this reason the government approved the proposal of the Medical Research Council for expenditure of $150,000 per annum on research in chemotherapy, to enable this country to play a greater part in future in making new discoveries in this field.

PARIS

(From Our Regular Correspondent)

June 11, 1938.

Culture of Virus of Measles

At the May 24 meeting of the Académie de médecine of Paris a paper was read by Dr. Harry Plotz of the Pasteur Institute on the results of his study of the virus of measles. He stated that the only animal which has thus far been found susceptible to contracting measles is the monkey (Macacus rhesus). There is a lack of uniformity in the symptoms following inoculation of defibrinated blood taken from a given human being with measles. In a series of inoculated monkeys the Koplik sign, mucosal and cutaneous eruptions, fever, leukopenia and lymphocytosis can all be found, but rarely all of them in a single animal. The most constant are acute leukopenia and a cutaneous eruption. In a former communication Dr. Plotz called attention to a form of measles (rougeole inapparente) in monkeys without apparent signs. The acute leukopenia appears, as do all the aforementioned clinical evidences of the infection, after a period of incubation varying from twelve to fifteen days. If a second monkey is inoculated with the blood of one who has shown only acute leukopenia, a typical eruption is to be observed. The blood used in all the experiments was taken from a patient with measles in the service of Prof. André Lemierre at the onset of the eruption. The blood was defibrinated and 5 cc. injected subcutaneously into a monkey. The remainder of the blood was employed for cultures. Thirteen days after inoculation of the monkey, a few maculopapular areas appeared on the face and trunk. The eruption became more diffuse on the fourteenth and fifteenth

days after inoculation and disappeared completely on the sixteenth day. There was a drop from 15,500 to 5,500 in the number of leukocytes on the fourteenth and fifteenth days, the number rising gradually to normal during the next few days. The leukopenia was accompanied by lymphocytosis. There was a marked rise in temperature between the ninth and the sixteenth day. Blood taken from this monkey on the fifteenth day was inoculated into a second monkey, and a typical eruption and leukopenia followed.

The cultures of the virus are made in the presence of living cells, the technic followed being the same as that used for the culture of other viruses. Five cc. of Tyrode's solution and several drops of a suspension of chick embryo cells are placed in a 50 cc. Erlenmeyer flask for ten days. Then 1 cc. of the serum of a noninoculated monkey and 1 cc. of defibrinated blood from a patient with measles are added. After a few drops of chicken plasma are added, the flasks are closed with rubber corks. Under these conditions a culture is obtained in the presence of proliferating cells. The rubber corks are employed to prevent liberation of carbon dioxide and maintain a more uniform p_H concentration. The cultures are placed in an incubator at 37 C. for three days and then flasks containing the freshly prepared medium inoculated with 1 cc. of the preceding culture, previously ground in a mortar. A temperature chart was shown of a monkey inoculated with 5 cc. of a culture which had been reinoculated ten successive times on the medium cited. A typical eruption appeared on the monkey's face and trunk; it became quite diffuse as early as the first day and paler on the second day and then disappeared completely. There was a sudden drop of the leukocyte count from 22,500 to 7,500 in twenty-four hours on the eighth day. Marked lymphocytosis was noted during the period in which the eruption was most diffuse.

Treatment of Cerebral Abscess

The neurologic surgeon Dr. Clovis Vincent, in a paper at the May 4 meeting of the Académie de chirurgie of Paris, stated that poor results in a certain proportion of cases are due to the fact that one is apt to employ a more or less routine method independent of the cause of the abscess. A sharp distinction should be made between abscesses which are secondary to nasal or aural foci and the type of abscess seen by the neurosurgeon. The former as a rule are in close proximity to the primary focus, are superficial and relatively small and are not accompanied by diffuse edema of a lobe of the cerebrum. Such postnasal or postaural abscesses usually can be successfully treated by simple drainage, provided the arachnoid space is excluded, as suggested by Lemaitre. The abscesses which the neurosurgeon encounters are large, usually multilocular and multiple. They are also relatively deeply located beneath the convexity of the cerebral hemisphere. The infection reaches the brain by way of the blood stream, and the lesion is accompanied by considerable edema. Clinically, a cerebral abscess of nonotitic or nasal origin may fail to cause any symptoms, or either the picture is that of acute encephalitis or there is a history of such a syndrome. Dr. Vincent has been successful in some cases in following the method proposed by Dandy; viz., adequate exposure without opening the dura mater and simple puncture. In the majority of Dr. Vincent's cases, however, this method had been unsuccessful. The technic now employed by him consists in removal of a large portion of the wall of the abscess cavity, a procedure analogous to that used in the treatment of a cerebral neoplasm, followed by closure without drainage. If too short an interval has elapsed since recession of the symptoms referable to the primary focus, one should be content to limit the operative intervention to the construction of an osteoplastic flap over the abscess area, without opening the dura, and should carry out the complete removal of the wall and contents of the abscess as a second step. Dr. Vincent warned against waiting too long to perform the second operation, because the wall of the abscess cavity increases rapidly in thickness, rendering its removal very difficult.

Vaccination Against Diphtheria Made Obligatory

Reference has been made to obligatory vaccination of all French soldiers against diphtheria with the aid of the Ramon toxoid, termed anatoxin here. Some time ago the lower house of the national legislature passed a bill extending such compulsory vaccination to all children during the second or third year. At its June 2 session the French senate passed a similar bill, so that such vaccination is now obligatory. Parents or guardians are made responsible for having all children vaccinated against diphtheria. No child can be admitted to any school without presenting a certificate showing that this law has been complied with. All school children up to the age of 14 years who have not previously been vaccinated must submit to vaccination as soon as possible after publication of the law in the *Journal officiel*. Publication took place June 3. The vaccinations with the aid of the Ramon toxoid will be carried out without expense to the parents. The outlay will be amply compensated by a marked reduction in the present mortality rate from diphtheria of 2,000 deaths and in the morbidity rate of over 20,000 cases annually.

Celebration in Honor of Professor d'Arsonval

The leading medical society of France, the Académie de médecine of Paris, devoted its June 7 meeting to the celebration of the fiftieth anniversary of the election to its membership of Professor d'Arsonval. Before bestowing a medal, Prof. Fernand Bezançon, president of the Académie de médecine, eulogized the many important contributions to science by Professor d'Arsonval. During a demonstration given by the physiologist Claude Bernard in 1873, d'Arsonval as a young medical student volunteered to repair a galvanometer which had failed to function during the experiment. This attracted the attention of Bernard, who asked d'Arsonval to become an assistant in his laboratory. He continued in this capacity until the death of Bernard. At this period biology and physics were considered to bear little relation to each other, and d'Arsonval devoted all his energies to demonstrating that this was not true. After Bernard's death in 1878 the young assistant d'Arsonval continued to work with Brown-Séquard until 1887, when the title of professor was bestowed on him. This period was the most fertile in the field of biophysics for d'Arsonval. His research studies on animal heat, electrophysiology, calorimetry and respiration were all published during this period.

D'Arsonval became the successor of Brown-Séquard on the latter's death in 1897 and continued to add to his already important contributions. Among these may be mentioned the perfection of many types of apparatus, such as galvanometers, calorimeters, galvanoscopes, chronometers and photometers; the description of the mechanism of contraction of muscles; the production of electricity in certain species of fishes; the discovery of the effect of electric currents on animals, and, above all, the discovery that high frequency currents can traverse the human body without damage to the tissues. The last-named contribution has been of the greatest importance in the development of modern therapeutic methods. One of the first applications of a discovery of d'Arsonval in medicine was the use of electrocoagulation in the treatment of bladder tumors. Since then the use of diathermy in the treatment of various diseases and more recently of the radio knife in surgical procedures and of transurethral resection of the prostate have greatly extended the field of application of d'Arsonval's discoveries.

At the close of the address by Professor Bezançon, d'Arsonval, who is still active at the age of 87, spoke for half an hour.

BERLIN

(From Our Regular Correspondent)

May 17, 1938.

News of the Universities

While news of the universities was reported in THE JOURNAL April 11 several important new developments have occurred since then. Dr. Scheel, national fuehrer of students, recently addressed the professors and docents of Hamburg University. He said that the university must become better integrated in the Nazi state; if this long overdue adjustment is not soon made, the university itself, despite its great tradition, will face a critical situation. Today some 20 per cent of the student population belong to Nazi party formations; this proportion is far too small. Even more necessary than the "orientation," as he called it, of the students toward the new principles is a similar adjustment on the part of the faculty members. Learning is not yet sufficiently Nazi, but it must become so if the university wishes to survive. Dr. Scheel also referred to the problem of the shortage of younger men trained in the professions. For example, each year for one man graduated by a school of engineering three engineers die. If the university cannot meet the demand for trained men, industry and government will have to undertake the training of the younger generation. Such an eventuality would mean, however, the extinction of the university.

Scheel's utterances serve to illuminate many aspects of the situation. On the other hand, it is interesting to note that the national minister of education is striving to aid those smaller universities which, because of the general decline in academic matriculation, had almost been forced to close. The ministry has repeatedly stated that the maintenance of the small university is of vital importance to the state. Official efforts are being made to persuade the student to enter the smaller institutions; the principal advantages alleged are the cheaper cost of living in the smaller community as contrasted with the big city and the greater opportunity for contact between pupil and teacher. It is pointed out that the ratio of docents to students at Berlin is 1 : 9.3 and at Munich 1 : 12.5, whereas at Marburg it is 1 : 6.3 and at Giessen 1 : 3.3. The ministry refutes the objection that the academic standards and scientific equipment of the smaller universities are inferior. It is denied that the most distinguished professors are to be found only in the big cities. Material inducements too, in the form of special offers of part time employment for undergraduates, are calculated to make the small university more attractive to prospective matriculants. It is too early to determine with what measure of success, if any, these efforts have been rewarded.

Of further interest are several new regulations. The legal status of the university professor has been regulated anew. Full professors are no longer retired but are "released" (namely, released from official duties); they continue to receive their salaries but are ineligible for any further increases. The so-called lecture-guaranty, namely, assurance of a specified minimum income from lecturing, is abolished by the new plan. In a general decree the national minister of education has defined the extent of academic activity of the "released" professor. The latter retains his erstwhile official title with the added designation "emeritus." Even after being "released" a professor may be retired on account of political or racial reasons or for professional incapacity; this would entail a reduction of his salary. Furthermore, it is now stipulated that a professor can no longer be transferred by order of the ministry. Previously the new régime had decreed that professors might be transferred and retransferred even against their will; this usually signified relegation to a smaller university. This is now changed. The age limit remains, as for all other government employees, at 65. Previously the compulsory retirement age of professors was not uniform throughout the reich; in many German states it was fixed at 68, in many others at 70, and so on. Another order, issued by the national minister of education, deals with the award of honorary academic degrees. The new law supersedes all former regulation of this custom. Henceforward the candidate for an honorary degree must measure up to strict professional and personal qualifications. The minister reserves to himself the right to examine any candidate. This greater discrimination can only be most welcome. During the postwar period the conferring of honorary degrees became common, and often purely financial considerations were involved. One might say that at certain institutions the doctor's degree honoris causa could be purchased for a price. In the future, distinguished personal contributions to knowledge will be the only recognized qualification for the honorary doctorate. No longer will degrees be conferred for indirect services, such as the establishment of foundations and other gifts by industrial magnates. Nor will noteworthy and nonscientific contributions to the state by men in public life any longer be rewarded by the honorary doctor's degree. Members of the Nazi party may now receive the honorary doctorate, but they must offer the same scholarly qualifications as other citizens. University professors on active service cannot receive the honorary doctorate. German citizens who are candidates for honorary degrees must qualify under the usual racial and political tests. A special authorization from the minister will be required for the conferring of the degree on a foreigner. Bestowal of the honorary title of senator, citizen or president by a university is regulated in general by the mentioned provisions, except that these titles may be conferred in recognition of indirect service to learning, such as the establishment of a foundation.

Measures have been taken to integrate Austrian universities into the Nazi system. These schools are now to form "the living bridge to the peoples and provinces of the southeast." The matriculation of Jewish students has been further restricted; the quota of Austrian Jews permitted to study at the university at any one time is fixed at 2 per cent in each special field. This percentage is somewhat smaller than the proportion of the Jewish to the total population of Austria, for, as stated in the ministerial decree, this establishment of a numerus clausus is calculated to offset a development that has been going on for decades. In the winter semester of 1936, 11 per cent of the student population of Austrian universities were Jews, namely, members of the Jewish religious group. At Vienna University alone the percentage of Jewish students was 19.42, and in the medical school about one third of all matriculants were of Jewish extraction. The following data on enrolment in the Austrian universities attest the importance of these institutions in the academic world: The number of students of all Austrian schools of university rank, including the veterinary and business institutes, is more than 15,000, whereas in the older German reich, with ten times as great a population, the number of university students is around 75,000, only five times the number of Austrian students. Of the 15,000 students in Austria a good 25 per cent are women. The enrolments at the various universities are 9,900 students at Vienna, barely 2,000 at Graz and 1,500 at Innsbruck. About 4,500 students are matriculated in the medical schools; this is the largest number in training for any one profession.

Group Examinations for Cancer

The professor of gynecology at Königsberg recently reported examinations at his clinic for cancer. Women of 30 and over are subjected to gynecologic examinations at definite intervals. These examinations are made to determine whether pathologic conditions exist. The women receive further consultation where the treatment is actually given. The group examinations are made only to promote the early diagnosis of cancer. Difficulties which were encountered at first in inducing the women to sub-

mit to this examination have now been overcome. In the course of 2,587 examinations of this type, eighty-one erosions suggestive of carcinoma were detected, that is, in 3.1 per cent of the examined women. In 25 per cent of these eighty-one cases of suspected erosion, the exploratory excision disclosed a carcinoma. Moreover, three carcinomas of the uterine cervix and one carcinoma of the rectum were detected among the 2,587 women. At the same time, these group examinations revealed that myoma is to be found at the most in 2 per cent of women who have passed the age of 30. In general it may be said that group examinations provide possibilities for the early diagnosis of carcinoma which are not available otherwise.

AUSTRALIA

(From Our Regular Correspondent)

May 24, 1938.

National Health Insurance Scheme

A bill for national health and pensions insurance, now being debated in the commonwealth parliament, will if it becomes law materially affect medical practice in Australia. Although the great advances made in prevention and treatment of disease in the last fifty years have increased the cost of satisfactory medical service, many are of the opinion that a plan involving impersonal payment will interfere with the personal relationship which must exist between patient and doctor. Inadequate payment will destroy this relationship, and if a practitioner must take too many patients in order to make a reasonable living he cannot cultivate that personal contact or spend the necessary time to do the good work. The federal council of the British Medical Association in Australia has agreed on a remuneration of 11 shillings per unit yearly. Whether this will prove adequate cannot be determined until the scheme has been in operation for a time. The government's present proposals for health insurance were described as incomplete and inadequate in an official statement issued by the federal council of the British Medical Association. The association considers that the essential principles which should form the basis of any national health service are that the service should offer full scope and opportunity for the prevention and cure of disease and the promotion of full mental and physical activity; that the service should offer opportunities for research, without which there can be no advance in medical or public health; that the service should be based on the provision of a general practitioner of his own choice for every individual, in accordance with the present system of private practice; that the service should be complete —not only must it provide to every one the services of a general practitioner, but it must make available consultant and specialist services and such auxiliary services as pathologic and x-ray examinations, nursing and massage services. There must also be accommodation and treatment in hospitals, sanatoriums and convalescent homes.

The present proposal embraces only a section of the community, about 1,850,000 of the workers, and does not include their dependents, and it makes no provision for the unemployed or the unemployable, many of whom are in the greatest need of medical attention. It does not supply a specialist or an institutional service. It ignores preventive measures and takes no account of the greatest medical need of the day, a vastly increased provision for early diagnosis of disease. The government's scheme is, in effect, an extension of the system of contract practice by which members of friendly societies receive medical benefits. The friendly societies are vitally interested in the scheme. They at present cater to 600,000 members and their dependents in Australia, and of these it is estimated that 400,000 will come under the new scheme. Their organizations could be of great assistance to the authorities in the administration of the scheme, because of their long experience with sickness benefit. However, friendly societies as such will receive no particular recognition from the scheme. They may form approved societies for administration of a section of medical benefits, but this advantage is offered to any organization with a membership of 2,000 or more. The loss in the friendly societies' voluntary membership will probably be considerable. As the national scheme makes no provision for dependents, it is expected that the friendly societies will come to some agreement with the medical profession for voluntary insurance against contingencies affecting dependents.

There are still many important details of the bill to be discussed, among them being the form of administration, the problem of the sparsely populated areas, the question of mileage and the definition of the scope of a general practitioner service. In all these matters, representatives of the profession are to be consulted. Other matters of great importance are cooperation between the national health insurance service and the hospital service in each state, the organization of a medical service for dependents, the organization of a medical service for the unemployed and cooperation with the dental profession.

Australian Consumption of Sugar

In spite of continuous efforts of members of the medical profession and others interested in the nutrition of the community to reduce the consumption of cane sugar and other highly refined carbohydrates in Australia, the figures of the sugar board for the 1937 season show a further increase in home consumption. The season showed a record output of 810,000 tons, compared with 782,000 in 1936 and 647,000 in 1935. Of the total purchased, 365,000 tons, or 45 per cent, was used by Australia, representing an average per capita consumption of 121 pounds (55 Kg.) per annum, or 0.33 pound (151 Gm.) daily. The position in Queensland is interesting. The Queensland Nutrition Council energetically condemns large amounts of sugar or sweet foods in a diet which attempts at balance, contending that, although sugar in itself is not harmful, it destroys appetite for the more wholesome foods. On the other hand, this state produces over 95 per cent of Australian sugar, and the industry has played an important part in the development of tropical areas.

The White Australia policy forbids the use of colored labor on the canefields, with the result that there is a large white population working under humid, tropical conditions and presenting nutrition problems of its own. The Queensland Nutrition Council is anxious to assist in the solution of these problems and has received promise of financial support from the Australian Sugar Producers' Association. It should be interesting, therefore, to watch the consumption of sugar in Queensland for the next several years.

Marriages

THEODORE C. ERICKSON, Montreal, Que., Canada, to Miss Mary Rachel Harrower of Cheam, Surrey, England, May 24.

GENEVA M. DYE, Washington, D. C., to Mr. Joseph Turner of Lurgan, North Ireland, in Hong Kong, China, in April.

FRANCIS JAMES BRACELAND to Miss Hope Van Gelder Jenkins, both of Philadelphia, June 1.

DOROTHY LOOMIS FRAME, New York, to Mr. Charles Billings England of Passaic, N. J., May 28.

PAUL E. MCMASTER to Miss Anna E. La Chapelle, both of Los Angeles, May 28.

MILTON L. MILLER, Chicago, to Miss Bernice Saul of New York, May 6.

MAURICE GERSHMAN to Miss Belle Kalikow, both of Brooklyn, April 3.

JAMES THOMAS KING to Miss Martha Foster, both of Atlanta, Ga., June 7.

Deaths

Frank Alexander Delabarre, Boston; University of Pennsylvania Department of Medicine, Philadelphia, 1895; also a dentist; assistant professor of orthodontia, 1907-1910, professor, 1910-1918, Tufts College Dental School; chief of staff orthodontia department and dean, Postgraduate School of Orthodontia, Forsyth Dental Infirmary for Children, 1914-1919; consultant, Massachusetts Department of Health; lecturer, Tufts College Dental School, and Harvard University Dental School; past president of the Massachusetts Dental Society, American Academy of Dental Science and the New York Society of Orthodontists; president-elect of the American Association of Orthodontists; aged 70; died, April 16, in the Faulkner Hospital.

Sandford Halsey Kinne, Binghamton, N. Y.; Syracuse University College of Medicine, 1909; member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; otolaryngologist to the Binghamton City and Lourdes hospitals and Charles S. Wilson Memorial Hospital, Johnson City; consulting otolaryngologist to the Binghamton State Hospital, Ideal Hospital, Endicott, and the Tioga County General Hospital, Waverly; aged 53; died, April 13, of nephritis, hypertension and cerebral thrombosis.

William Frederic Moore ⊕ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1905; assistant professor of bronchoscopy and esophagoscopy at the Graduate School of Medicine of the University of Pennsylvania; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Bronchoscopic Society; on the staffs of the Philadelphia General, Episcopal and Children's hospitals; served during the World War; aged 56; died, April 25, of heart disease.

William John Steele, Baldwin, N. Y.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; member of the Medical Society of the State of New York; on the staffs of the Nassau Hospital, Mineola, and the Mercy Hospital, Hempstead; formerly member and president of the board of education; bank president; for many years postmaster; aged 70; died, April 21, of diabetes mellitus, pyelonephritis, coronary sclerosis and lobar pneumonia.

R. Decatur Smith, Greenville, S. C.; University of the South Medical Department, Sewanee, Tenn., 1897; Medical College of the State of South Carolina, Charleston, 1902; member of the South Carolina Medical Association; past president of the Greenville County Medical Society; aged 67; died, April 19, in the General Hospital of toxemia due to burns received from a gas heater.

William Orlin Colburn ⊕ Lincoln, Neb.; Northwestern University Medical School, Chicago, 1904; member of the American Academy of Pediatrics; past president of the Lancaster County Medical Society; chairman of the department of pediatrics, Bryan Memorial Hospital; aged 57; died, April 10, of coronary occlusion, nephrolithiasis and pyonephrosis.

Eugene Gates, Two Rivers, Wis.; Rush Medical College, Chicago, 1902; member of the State Medical Society of Wisconsin; aged 67; past president and secretary of the Manitowoc County Medical Society; served during the World War; aged 68; on the staff of the Municipal Hospital, where he died, April 28, of cerebral hemorrhage and arteriosclerosis.

Alfred Lubbert Van Dellen ⊕ Chicago; Northwestern University Medical School, Chicago, 1910; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staffs of the Illinois Eye, Ear, Nose and Throat Infirmary and the Englewood Hospital; aged 50; died, April 1, at Rochester, Minn., of ureterolithiasis.

Norman L. Howison, Menomonie, Wis.; State University of Iowa College of Medicine, Iowa City, 1882; for many years county physician and health officer of Menomonie; for thirty years attending physician to the Dunn County Asylum and County Home; aged 88; died, April 1, of a fracture of the hip received in a fall.

Paul Carroll Lybyer, Ogdensburg, N. Y.; Rush Medical College, Chicago, 1914; member of the Medical Society of the State of New York and the American Psychiatric Association; served during the World War; aged 52; on the staff of the St. Lawrence State Hospital, where he died, April 23, of chronic myocarditis.

Walter Spencer Fleming ⊕ Mount Vernon, N. Y.; University of the City of New York Medical Department, 1884; an Affiliate Fellow of the American Medical Association; aged 74; on the staff of the Mount Vernon Hospital, where he died, April 5, of hypertensive heart disease and cerebral hemorrhage.

Ernest Robert Middleton, Abilene, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1909; aged 52; fellow of the American College of Surgeons; on the staff of the West Texas Baptist Sanitarium; aged 53; died, April 15, of coronary occlusion.

Robert Francis Morton, Staten Island, N. Y.; New York Medical College and Flower Hospital, New York, 1937; aged 30; intern at St. Vincent's Hospital, West New Brighton, where he died, April 11, of injuries received when thrown from an ambulance while speeding to a sick call.

Robert F. Gates, Brownville, N. Y.; Homeopathic Hospital College, Cleveland, 1885; for many years member of the board of education; at one time county coroner; health officer of the villages of Pamelia, Brownville and Glen Park; aged 77; died, April 3, of myocarditis.

Frederick Morton Harris, Green Bay, Wis.; Rush Medical College, Chicago, 1914; formerly secretary of the Brown-Kewanee-Door County Medical Society; served during the World War; aged 49; died, April 7, in the Veterans Administration Facility, Hines, Ill.

Warren Brown Keator, Findlay, Ohio; Barnes Medical College, St. Louis, 1895; member of the Ohio State Medical Association; served during the World War; formerly on the staff of the Home and Hospital; aged 72; died, April 20, of cerebral hemorrhage.

Frank Anson Smith, Lebanon, N. H.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1884; member of the New Hampshire Medical Society; aged 82; died, April 25, in St. Petersburg, Fla., of coronary occlusion.

James Harris Hicks, Denton, Texas; Barnes Medical College, St. Louis, 1899; member of the State Medical Association of Texas; formerly on the staff of the Denton Hospital and Clinic; at one time county health officer; aged 62; died, April 6, of heart disease.

John Calvin Keller ⊕ Windgap, Pa.; Columbus Medical College, 1886; past president of the Northampton County Medical Society; for many years secretary of the board of health of Windgap; on the staff of the Easton (Pa.) Hospital; aged 73; died, April 26.

Floyd Grant Patterson ⊕ Du Bois, Pa.; University of Pittsburgh School of Medicine, 1909; served during the World War; on the staff of the Du Bois Hospital; formerly on the staff of the Maple Avenue Hospital; aged 50; died, March 25, in Bradford.

Francis Aubrey Howard, Slater, Mo.; St. Louis Medical College, 1877; member of the Missouri State Medical Association; aged 84; died, April 22, in the John Fitzgibbon Memorial Hospital, Marshall, of chronic nephritis, uremia and arteriosclerosis.

Garabed Arshag Zacar Garabedian ⊕ Tulsa, Okla.; Rush Medical College, Chicago, 1913; assistant in medicine (pediatrics) at his alma mater; aged 49; died, April 26, of coronary thrombosis secondary to streptococcic infection of the throat.

Frank J. Hitchcock, Binghamton, N. Y.; University of Vermont College of Medicine, Burlington, 1890; member of the Medical Society of the State of New York; coroner; aged 77; died, April 25, in the City Hospital of coronary thrombosis.

Edgar Alexander Fisher ⊕ Worcester, Mass.; Boston University School of Medicine, 1887; fellow of the American College of Surgeons; on the staff of the Worcester Hahnemann Hospital; aged 72; died, April 18, of lobar pneumonia.

Winfield Scott Gehrett, Deshler, Ohio; Western Reserve University School of Medicine, Cleveland, 1919; member of the county board of health; aged 44; died, April 5, in the Woman's and Children's Hospital, Toledo, of coronary thrombosis.

Ellen Emma Bartholomew Scudder, New York; Cornell University Medical College, New York, 1899; formerly a medical missionary; aged 64; died, April 10, of arteriolar nephrosclerosis, cardiac hypertrophy and hypertension.

Ross Edward Anderson, Memphis, Tenn.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1931; member of the Tennessee State Medical Association; aged 30; was found dead, May 3, of a self-inflicted bullet wound.

John A. Stapleton, Rochester, N. Y.; University of Buffalo School of Medicine, 1891; member of the Medical Society of the State of New York; for many years police and fire surgeon; aged 78; died, April 13, of myocarditis and nephritis.

Harold Virgil Johnson, Fort Worth, Texas; Jefferson Medical College of Philadelphia, 1909; member of the State

Medical Association of Texas; on the staff of the Baptist Hospital; aged 50; died, April 22, of coronary heart disease.

Nicasio Gregorio Gonzalez, Kansas City, Mo.; University of Kansas School of Medicine, Kansas City, 1930; aged 34; on the staff of the University of Kansas Hospital, Kansas City, Kan., where he died, April 30, of myelogenous leukemia.

William Henry Coe ⊕ Auburn, N. Y.; Bellevue Hospital Medical College, New York, 1896; aged 66; on the staffs of the Mercy Hospital and the Auburn City Hospital, where he died, April 6, of duodenal perforation and cholecystitis.

Donald Clare Hoffman, New York; Harvard University Medical School, Boston, 1926; an associate medical director of the Metropolitan Life Insurance Company; aged 39; died, April 21, in Rye, N. Y., of essential hypertension.

William Garfield Henderson, Cuba, Mo.; University of Louisville Medical Department, 1912; member of the Missouri State Medical Association; formerly county coroner; aged 56; died suddenly, April 19, of coronary thrombosis.

Oscar Highland Ternstrom ⊕ Minneapolis; University of Minnesota Medical School, Minneapolis, 1920; on the staff of the Lutheran Deaconess Hospital; aged 46; died April 20, in St. Barnabas Hospital, of coronary thrombosis.

Whitfield Harral, Dallas, Texas; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; formerly medical director of the Southwestern Life Insurance Company; aged 67; died, April 12.

Robert William Bobe, Monroe City, Ind.; Washington University School of Medicine, St. Louis, 1934; member of the Kansas Medical Society; aged 28; died, April 13, in the Deaconess Hospital, St. Louis, of heart disease.

William Ira Fulton, Mount Vernon, Mo.; Missouri Medical College, St. Louis, 1897; member of the Missouri State Medical Association; served during the World War; aged 65; died, April 17, in Springfield of angina pectoris.

Walter P. McGrath, Menasha, Wis.; Milwaukee Medical College, 1903; was president of the health council, and city physician; aged 59; died, April 14, in St. Elizabeth's Hospital, Appleton, of uremia and chronic nephritis.

Russell Newton Davis, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; on the staff of the South Shore Hospital; aged 54; died, April 30, of coronary thrombosis.

Isaac N. Mayfield, Giddings, Texas; Louisville (Ky.) Medical College, 1880; member of the State Medical Association of Texas; for many years county health officer; aged 81; died, April 12, of diabetes mellitus.

Edward Philip Laskey ⊕ Haverhill, Mass.; Harvard University Medical School, Boston, 1909; on the staff of the Haverhill Municipal Hospital; aged 55; died, April 23, of aortic stenosis and aortic regurgitation.

Haim Guelman ⊕ New York; University and Bellevue Hospital Medical College, New York, 1910; on the staff of the Fordham Hospital; aged 58; died, April 29, in the Fordham Hospital of coronary occlusion.

William S. Grisell, Bartley, Neb.; Kansas City Medical College, 1899; formerly owner of the Grisell Memorial Hospital, Ransom, Kan.; served during the World War; aged 65; died, April 13, of influenza.

Taylor Hudson, Belton, Texas; Louisville (Ky.) Medical College, 1877; member and past president of the State Medical Association of Texas and the Bell County Medical Society; aged 83; died, April 24.

Albert Eugene Smith ⊕ Craig, Colo.; Denver and Gross College of Medicine, 1904; served during the World War; aged 71; died in April, in the Fitzsimons General Hospital, Denver, of nephritis.

Samuel A. Gifford, Laurel, Ind.; Medical College of Ohio, Cincinnati, 1879; member of the Indiana State Medical Association; aged 82; died, April 26, of chronic hypertrophy of the heart and nephritis.

John Craig McAllister ⊕ Ridgway, Pa.; College of Physicians and Surgeons, Baltimore, 1889; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 76; died, April 18.

James Finley Leeper, McConnelsville, Ohio; Starling Medical College, Columbus, 1878; member of the Ohio State Medical Association; aged 79; died, April 22, of cerebral hemorrhage.

William Augustine Hulse, Bay Shore, N. Y.; Bellevue Hospital Medical College, New York, 1883; member of the Medical Society of the State of New York; aged 79; died, April 8.

Eva S. Shaver, Chicago; National Medical University, Chicago, 1903; aged 67; died, April 6, in the Norwegian American Hospital of hypertension and chronic myocarditis.

Thomas Linley, Cleveland; Western Reserve University Medical Department, Cleveland, 1896; aged 64; died, April 6, of cerebral hemorrhage, arteriosclerosis and hypertension.

Peter Robb McArthur, Los Angeles; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1899; member of the California Medical Association; aged 69; died, April 5.

Joseph J. Gottlob, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1900; aged 69; died in April at the City Hospital.

Stark Armistead Sutton ⊕ Norfolk, Va.; University of Maryland School of Medicine, Baltimore, 1894; formerly city health officer; aged 65; died, April 1, of pneumonia.

Ray Gifford Lawrence, Port Jervis, N. Y.; New York University Medical College, New York, 1898; aged 68; was found dead, April 4, of injuries received in a fall.

John H. Haizlip, Nederland, Texas; College of Physicians and Surgeons, Baltimore, 1897; member of the State Medical Association of Texas; aged 65; died, April 11.

Henry Bascom Shields, Carthage, N. C.; Atlanta Medical College, 1882; member of the Medical Society of the State of North Carolina; aged 85; died, April 15.

Ernest Albert Chapman, Dobbs Ferry, N. Y.; New York University Medical College, 1896; aged 76; died, April 1, of chronic pyelonephritis and myocarditis.

Edwin Robert Espie, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; aged 73; died, April 25, in Weirsdale, Fla.

W. Frank Schrader, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1894; aged 70; died, April 14, of hemorrhage following a gallbladder operation.

Luther L. Gilbert, Prospect Station, Tenn.; College of Physicians and Surgeons, Baltimore, 1886; aged 72; died, April 30, of aortic regurgitation.

Daniel William Lewis, Philadelphia; Jefferson Medical College of Philadelphia, 1909; aged 63; died, March 31, of cerebral hemorrhage.

Nathan R. Gregg ⊕ Coulee City, Wash.; St. Louis College of Physicians and Surgeons, 1893; aged 64; died, April 23, of coronary thrombosis.

Lucian Mason McLendon, Dallas, Texas; Physio-Medical College of Texas, Dallas, 1905; aged 74; died, April 13, of coronary occlusion.

Robert Woodhouse Fowler, Richmond Hill, N. Y.; New York University Medical College, New York, 1897; aged 64; died, April 28.

Irving H. Edginton, Detroit; Memphis (Tenn.) Hospital Medical College, 1891; aged 68; died, April 3, of cerebral hemorrhage.

James H. Sebree, Paris, Ky.; Louisville National Medical College, Medical Department State University, 1892; died, April 16.

William Asa Smith, Glendale, S. C.; Medical College of the State of South Carolina, Charleston, 1891; aged 69; died, April 11.

Dunklin Pierce McLaurin, Jackson, Miss.; University of Tennessee Medical Department, Nashville, 1892; aged 78; died, April 4.

Berthold P. Bebee, St. Louis; St. Louis University School of Medicine, 1903; aged 57; died, April 22, of a gunshot wound.

Joseph A. Smith ⊕ Chicago; Chicago College of Medicine and Surgery, 1909; aged 54; died, April 3, in Miami Beach, Fla.

Max Finkelstein ⊕ New York; University of Maryland School of Medicine, Baltimore, 1916; aged 50; died, April 25.

James Moore, Trowbridge, Ont., Canada; Trinity Medical College, Toronto, Ont., 1900; died, April 10, in Listowel.

John Ballinger Eads, Lexington, Ky.; University of Louisville Medical Department, 1897; aged 67; died, April 26.

Charles Walden, Harrisburg, Ill.; St. Louis College of Physicians and Surgeons, 1909; aged 65; died, April 25.

Wesley John Reid, Detroit; Michigan College of Medicine and Surgery, Detroit, 1898; aged 63; died in April.

Robert James Liles, Tyler, Texas; Memphis (Tenn.) Hospital Medical College, 1893; aged 77; died, April 22.

Lewellyn D. Hixson, Ann Arbor, Mich.; Detroit College of Medicine, 1897; aged 65; died, April 18.

Bureau of Investigation

SOME MISCELLANEOUS MAIL-ORDER FRAUDS

For many years the Post Office Department has done splendid service in protecting the public against medical frauds that operate through the United States mails. The task is a difficult and a thankless one. Unfortunately, few newspapers and magazines publish the results of the work done by the Post Office Department. In the nature of the case, the majority of such frauds have been made possible through the carelessness or venality of some newspapers and magazines which open their advertising pages to the fraudulent concerns.

In certain instances in which the frauds have been particularly successful in a financial way the men behind them have wielded no little political influence, and cases are on record in which in the past the official positions of influential politicians have been used in the interest of the medical mail-order faker and against the work of the Post Office Department.

This department of THE JOURNAL has for more than a quarter of a century abstracted, usually in some detail, the cases of medical mail-order fraud in which, through the activity of the Post Office Department, the exploiters have been debarred from the use of the United States mailing privileges. Some of the frauds, in the nature of the case, are comparatively trivial. Others are such as to have brought the men who conduct them large fortunes. In this issue we give in brief form the essential facts regarding some comparatively small-bore medical swindles against which fraud orders have been issued recently. These miscellaneous fakes cover such fields as alleged cures for obesity, diphtheria, tuberculosis and diabetes:

DELATOL LABORATORIES.—This was a fraudulent alleged cure for diabetes that was marketed by one Frank Willard Kimball from Oakland, Calif. Kimball had also been associated with the Melatol Laboratories of San Francisco, which sold another fake cure for diabetes. In October 1935 Kimball was convicted of violating the Food and Drugs Act in connection with his activities in the Melatol Laboratories and was fined $400. In January 1937 the Melatol Laboratories were debarred from the mails. Kimball advertised that his so-called Delatol treatment would cure diabetes. The "treatment" consisted of tablets and "Herb Tea." Government analyses showed that the tablets consisted essentially of laxatives (senna, licorice, and the like), while the Herb Tea was mainly sassafras bark, licorice root, mistletoe leaves and stems, juniper berries and mint leaves. In other words, the Herb Tea, like practically every fake cure for diabetes, was essentially a diuretic. The scheme in such cases consists in causing the patient to pass a larger amount of urine daily, so that any given specimen contains a smaller *proportion* of sugar, although the actual sugar excretion may be increased. Kimball was not a chemist, pharmacist or physician and had no medical training. His scheme was declared a fraud, and a fraud order was issued against the Delatol Laboratories and against Frank Willard Kimball on Feb. 24, 1938.

JOSEPH W. HOLLAND.—From Danville, Ala., one Joseph W. Holland and his two sons, Hubert and Alvin J., advertised and sold through the mails a booklet entitled "Tuberculosis and Pneumonia, Their Cause, Symptoms, Treatment and Prevention." It was represented that this booklet contained information on how to cure tuberculosis and certain other diseases. The business was started at Florence, Ala., in 1933 but later moved to Danville. Holland was formerly a school teacher. He asked $1.25 for his booklet. There was also worked, in addition, the trick-prescription fake. Holland told his victims that "Dr. Hull's Prescription" was a good one but that only a few drug stores would carry the medicines necessary to fill the prescription. Holland offered to get it filled for $1.50. Investigation by the Post Office authorities showed that Holland's so-called treatment was contrary to modern practices employed in the treatment of tuberculosis and in many instances would prove distinctly harmful to sufferers from tuberculosis. The Hollands had no physicians, chemists or pharmacists connected with their business and none of them had any medical training. The government declared that such an attempt by inexperienced laymen to treat a disease as deadly as tuberculosis was a danger to the public health. On June 1, 1938, the mails were closed to Joseph W. Holland and Joseph W. Holland and Sons.

EDWARD J. MCCANN AND TONSOL.—From Elmira, N. Y., Edward J. McCann sold through the United States mails a preparation that he called "Tonsol," for the alleged treatment and cure of diphtheria and tonsil infections. The business was started in 1922. When analyzed by the government chemists, Tonsol was found to be essentially a 15 per cent solution of mild silver protein (argyrol type). The danger, not only to the individual but to the community, of attempting to treat diphtheria with a spray sold on the mail-order plan, is obvious. During the hearing the postal authorities brought out the fact, well known to physicians, that in addition to diphtheria the tonsils may be the site of syphilitic ulcers and cancers and are also usually acutely inflamed in scarlet fever. Obviously, spraying such tonsils with Tonsol would be not merely ineffective but dangerous to the patient, because of the neglect of proper treatment. McCann had no medical education or training and had no one with such qualifications connected with his business. Tonsol was manufactured by McCann and his wife at their residence, despite the fact that neither of them had any education or training in chemistry or pharmacy. On Feb. 24, 1938, a fraud order was issued against E. J. McCann and Tonsol.

SLENDRA LABORATORIES.—This was another Elmira, N. Y., medical mail-order fake. Slendra Laboratories was a trade name used by Joseph H. Updyke, whose regular business was that of conducting a lunch room. In other words, Mr. Updyke seemed to work both sides of the street—he sold foods that presumably would increase the weight, and he also had some pills that were alleged to reduce weight. When analyzed in the government laboratories, Mr. Updyke's tablets were found to contain about one-tenth grain of iodine and one-half grain of phenolphthalein, with a small amount of leptandrin, corn starch, chalk and mineral oil. In common with most obesity-cure quacks, Mr. Updyke so advertised as to lead prospective victims to believe that neither dieting nor exercise was necessary in order to secure the reduction of weight promised as a result of using his Slendra tablets. After the victim had parted with his money, however, he was told that if he wished to get thinner he should not eat pork, ham, bacon, any fat meat, olive oil, butter, cream, cheese, sugar, candy, pastry, potatoes, sardines in oil or bananas; he was also told to get some exercise in the open air every day! If such a regimen were followed, the Slendra tablets could, of course, have been thrown in the ash-can and just as good results obtained. While the amount of iodine in Updyke's tablets was not sufficient to produce a reduction in weight, it might, in certain cases, produce thyroid poisoning. No physicians, chemists or pharmacists were connected with Mr. Updyke's business, and in the government report on the case it seems that Mr. Updyke cynically admitted to the Post Office Inspector who investigated the case that he did not think that Slendra would cure obesity. On March 16, 1938, the Slendra Laboratories were debarred from the United States mails.

WEIGHT CONTROLS

Cataracts Develop Following Use of Anti-Fat Nostrum

In spite of the warnings from the medical profession and public health officials against the use of secret remedies sold for the alleged reduction of weight, products of this type continue to take their toll. During the past year the Bureau of Investigation has received reports from physicians of serious results following the use by patients, on their own responsibility, of a piece of mail-order quackery sold as a 'fat cure" under the name of "Weight Controls." The product, which is reported to come in capsule form, was sold by Weight Controls, Inc., House of Health Building, 33 West 47th Street, New York City.

From tests made in October 1937 by the A. M. A. Chemical Laboratory of the contents of some of the capsules sent in by physicians as being Weight Controls, it appeared that the active ingredient of this nostrum was either dinitrophenol or a closely allied substance, dinitrocresol.

Dr. J. J. Hanna of Quanah, Texas, reported the case of a 21 year old woman who came to his office complaining of

poor vision. She was overweight and for four and a half months she took capsules which she said she purchased from Weight Controls, Inc. These reduced her weight some 46 pounds, but her vision was reduced to light perception in the right eye and 20/200 in the left, and that eye failing fast.

The State Medical Society of Wisconsin reported that Dr. E. E. Neff of Madison, who had been cooperating with the society in making a study of cataract cases resulting from the use of reducing capsules, reported the case of one cataract patient who had allegedly used a product sold and distributed by Weight Controls, Inc.

Dr. Alton V. Hallum of Atlanta reported that he had a patient who claimed to have taken two boxes of Weight Controls capsules, lost about 25 pounds weight and in a few months developed bilateral cataract.

Drs. Dodd and Hamner of Petersburg, Va., reported the case of a patient who allegedly took Weight Controls and developed cataract and became totally blind in both eyes within twelve days.

Dr. J. B. Nail of Wichita Falls, Texas, has reported the case of an obese young woman who came to him for examination, complaining of loss of vision. She was found to have bilateral cataract and gave a history of having taken Weight Controls.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ACTIVITIES OF CHILD HEALTH COMMITTEE IN COUNTY MEDICAL SOCIETY

To the Editor:—Have you any information of value in line with the activities of a child health committee of a county medical society? I will greatly appreciate any suggestions you have to offer.

C. HAYDEN PHILLIPS, M.D., Wilkes-Barre, Pa.

ANSWER.—These activities might include the following, or as many of them as are appropriate in a local situation:

1. The community water supply and its relation to sewage disposal and other sanitary questions should be studied. A safe water supply is a fundamental necessity for a satisfactory state of child health, since advice to boil water before feeding to infants is not universally followed among ignorant mothers.

2. The source, handling and distribution of the community milk supply should be studied, with particular reference to availability of fresh pasteurized milk from tuberculin tested herds, delivered in properly capped bottles. A safe milk supply is fundamental for satisfactory child health conditions and it is generally agreed that minimum requirements are tuberculin tested herds, clean barns and milk houses, clean, healthy workers, clean utensils, prompt cooling and delivery of milk, pasteurization (except certified milk) and bottling.

3. Investigation should be made into the availability of health supervision for well babies for all classes of the population, each at an appropriate price. This means that families which can pay for supervision of their own babies should do so through appropriate relationships with private physicians of their own choice, but it also means that provision must be made for similar care for those unable to pay. If this problem is faced and solved by the medical society, there will be no occasion for other community groups to put forward solutions of their own which may be inequitable or otherwise unsatisfactory.

4. Provision should be made in the community, through health department or county medical society channels or jointly, for a constant program of parent education with relation to health. This would include use of the radio, if available, and of newspapers, pamphlets, physician speakers and other methods, such as the occasional use of exhibits and motion pictures.

5. Provision should be made through the offices of private physicians, or by other means worked out cooperatively between the health department and the local medical profession, to insure immunization against smallpox, diphtheria and perhaps whooping cough, during the first year of life for all children. As stated before, financial arrangements should be appropriate to the financial capacity of the family; but, whether pay or free, the work should be done wherever possible through the office of a physician chosen by the family.

6. The community hospital facilities for children should be studied and inadequacies or inequalities, if any are discovered, should be called to the attention of the community with appropriate suggestions for remedial measures.

The following material has been published by the American Medical Association Bureau of Health and Public Instruction, dealing with the relationship of physicians to the public health program both as regards relationships with public health officials and in connection with their public health and health education responsibilities. It will be sent free on request to physicians:

Health Education Over the Radio.
Authenticity of Health Education Materials.
The Health of the School Child.
Cooperation in Preventive Medicine.
The Doctor as a Health Educator.
Opportunities and Obligations in Health Education.
Helping the Doctor in Health Education.
The Physician's Place in the Health Program.
Practicing Physicians and the Public Health Workers.
Teaching the Public About Health.

Other sources of information include the state department of health, the United States Public Health Service, Treasury Department, Washington, D. C., and the United States Children's Bureau, Department of Labor, Washington, D. C.

OBLITERATIVE PLEURITIS IN PULMONARY TUBERCULOSIS

To the Editor:—What is the etiology of obliterative pleuritis occurring during the course of artificial pneumothorax for pulmonary tuberculosis? Is it necessarily progressive? If so, how long would it take for the pleural cavity to become obliterated if the degree of pulmonary collapse is about 75 per cent? Assuming that the process began with the formation of fluid (hydropneumothorax) would the spontaneous disappearance of the fluid retard the progress of the disease? If the pleural cavity should become completely obliterated, would the lung necessarily reexpand completely? Does the process give any information regarding the underlying parenchymatous lesions? What is the ultimate prognosis? What is the treatment?

M.D., New York.

ANSWER.—This condition is caused by a combination of factors, the most important of which is fluid in the pleural cavity, usually caused by infection. The quality of fluid is important. Simple transudates are rather easily resorbed without any after-effects; but serous exudates, particularly those caused by infections with the tubercle bacillus, are prone to cause the pleural surfaces to adhere on resorption of the fluid. An added factor is the content of fibrinogen. The more fibrinogen present the heavier will be the clot and in turn the quicker will be organization by fibrosis. Any acute purulent infection that tends to destroy this "grundlage" of fibrosis will militate against obliterative fibrosis. The mechanism is chiefly an irritation of a surface of the pleura in the region of a tubercle; then a lymph node or other obstruction prevents a return flow of lymph toward the hilus of the lung and this is followed by the accumulation of fibrinous exudate, as mentioned. First, a fibrinous exudate forms between the pleural layers, which undergoes a monocytic infiltration, followed by fibroblasts and capillaries (granulation tissue) and ultimately fibrous tissue; second, adhesion of the two layers may take place without the fibrinous exudate, but in such cases the two layers are "semidry." They usually have previously undergone varying degrees of inflammation, most commonly by the tubercle bacillus. In the latter instance it is a "creeping" process. The new fibrous tissue draws in new pleural surfaces and continues on till the whole cavity is frequently obliterated by thin "spider-web" adhesions.

The time required to obliterate a cavity 75 per cent collapsed is variable. If proper collapse is kept up it need not become obliterated at all. Occasionally the "creeping" type will obliterate any cavity in periods ranging from two to four months. The spontaneous disappearance of the fluid will augment rather than slow down obliteration, if it has the proper basis (fibrinous exudate). Transudates are resorbed without such a result. The lung will never reexpand completely because of fixation, but almost complete expansion may result if the fibrosis is not too dense. Dense fibrosis will sometimes encase the lung so that expansion is almost nil. There is no relation to the underlying lung lesion any more than that the infection usually emanates from a subpleural lesion. It is predominantly a pleural process.

The prognosis depends on the extent of underlying lung lesion, usually tuberculosis.

There is no treatment unless the lung lesion is due to an abscess, when resection and drainage may effect a cure, or to tuberculosis when a thoracoplasty may, and usually will, accomplish the result. In bilateral disease these operations may not be possible.

MENTAL AND PHYSICAL DEVELOPMENT IN PREMATURE INFANT

To the Editor:—A female infant weighing 4 pounds (1,800 Gm.) was delivered in September 1936 at about the eighth month of gestation. The delivery was normal and the child gained rapidly in weight: at 6 months 11 pounds (5 Kg.) and now at 17 months 21 pounds (9.5 Kg.). She has received cod liver oil and orange juice since 3 weeks of age and similac almost from birth. At about 15 months of age she could neither sit straight by herself nor walk. She could stand erect by herself for a short time when supported, but when she was sitting her head drooped forward and her back arched. The first tooth appeared at 10 months and she now has eight. Her anterior fontanel is open and measures 1.5 cm. in diameter. X-ray examination of the wrist suggests healed rickets. She does not speak but seems to have normal intelligence. For the past six weeks she has had vitamin D and drisdol. She has been given ultraviolet radiation and a grain of desiccated thyroid daily for the past four weeks. She has improved slightly and sits somewhat more erect but not for any length of time. Suggestions as to diagnosis, prognosis and treatment will be appreciated.

M.D., Ohio.

ANSWER.—From the data presented it is obvious that the infant was premature. The fact that the child at 17 months does not sit up well is rather suggestive of cerebral injury, possibly a result of a cerebral hemorrhage, which occurs far more frequently in immature infants than in those born at full term. Development in prematurely born infants may be considerably delayed. Mental development, although somewhat slower than normal, is not usually so long delayed as is evidenced in this case. More detailed data, with employment of the Gesell Schedule as a basis, is required before any definite conclusion can be reached. The prognosis at the present time should be guarded and the child carefully watched as to the mental factor. Chances are fairly good that the intelligence will be impaired, although one is not justified in making this commitment to the family on the basis of the little evidence presented or without a longer period of observation. If she still has not progressed favorably after several months more, encephalography should be considered for the purpose of establishing the amount of cerebral tissue present. This, of course, is of value only from a prognostic point of view and not in any therapeutic sense.

The nutritional state of the infant sounds fairly good, although slightly below the expected level. The only treatment is to continue with all possible dietary aids. Whole milk in place of the artificial feeding would perhaps be beneficial.

Thyroid is good therapy, although it should not be given constantly. In addition, a full baby diet with plenty of vegetables, chopped meats, cottage cheese and fruits should be given. If three teaspoonfuls of one of the fortified cod liver oils now available are given daily, no further vitamin D is needed. Calcium in the form of calcium gluconate, a drachm (4 Gm.) in the day's milk supply, may help. In addition a few grains of iron and ammonium citrate mixed with a little yeast extract should be given to the infant as a further tonic.

ROENTGENOGRAPHY OF MASTOID

To the Editor:—Has any one ever done any research on the condition of the mastoid process, after definite involvement as indicated by x-ray examination, and on the x-ray appearance of this process after operation?

M.D., Iowa.

ANSWER.—A search of the literature of the last few years does not indicate any work in which there was a definite attempt to correlate what was found in the mastoid process after there was x-ray evidence of disease. The roentgenogram is a very valuable adjunct in the diagnosis of suppurative conditions of the mastoid process. Its use, however, unless coupled with experience and judgment, is apt to be fallacious. From the very beginning of an otitis, with its concomitant congestion of the mastoid process, there is x-ray evidence in the way of cloudiness in the mastoid area. Increased blurring and disappearance of the bony trabeculae are shown in the more advanced forms of the disease. With few exceptions the evidence given in the first week of an otitis is not of such a nature as to determine surgical intervention, and this is true also of mastoiditis which is more developed. The clinical observations determine the course and the treatment of the disease. The roentgenogram does tell how well pneumatized the mastoid process is, for example. Every otologist of experience has had occasion to compare what he has found at operation with what he saw on the x-ray film, and most men of experience are agreed that the x-ray evidence is often deceptive. Conditions found at operation may be frequently more extensive than indicated by the x-ray evidence, and the reverse also is true. X-ray examination may lead one to believe that there is extensive destruction and the surgeon may find only a moderate involvement. It often happens, furthermore, that there will be a need for repeated x-ray examination after operation because the patient is not doing well. The large central operative cavity is usually clearly marked and, in addition, one can see those cells which the operative procedure cannot completely remove and also the cells of the petrosal part of the temporal bone, which are invaded by the surgeon in only a small percentage of cases.

The earlier stages of mastoid disease and the milder forms followed by recovery are seldom, if ever, noted because there is no need for surgical intervention. In cases in which surgical operation has been found necessary it is seldom that the pathologist gets to examine anything more than a number of bone fragments which are removed.

PAINFUL NOCTURNAL ERECTIONS NOT DUE TO TABES

To the Editor:—A man, aged 65, Jewish, had tabes about twenty-five years ago, after having contracted syphilis from twelve to fifteen years previously. He received the routine medication but was rather careless. Now he has almost all the principal symptoms of tabes but is able to attend to his business and would be more or less comfortable if not for one particular kind of attack, which occurs whenever he falls asleep. It consists in painful erection (devoid of any sexual feeling) always accompanied by a severe tingling sensation involving the whole body, reaching such a degree of painfulness that he can get rid of it only by forcing himself to wake up. The intensity of the sensation is in direct proportion to the soundness of his sleep and gradually disappears after he wakes up: first the erection and then, gradually, the tingling sensation. The attacks are getting more severe and the patient is developing a suicidal complex. What is the mechanism of this sensation, what is its connection with falling asleep, and what suggestions for therapy can be made?

M.D., Pennsylvania.

ANSWER.—The painful nocturnal erections of which this patient complains are almost certainly not associated with tabes dorsalis. If they rest on any organic basis they are probably due to a local lesion in the urinary tract. It is barely possible that they may be associated with overfilling of a neurologic bladder, but it is rather more likely that they are due to a hypertrophied prostate. Examination by a urologist is essential. If no organic lesion is found in the genito-urinary tract, the attacks are almost certainly on a psychic basis and, since the patient has become suicidal, he should be under the care of a psychiatrist.

PRESACRAL SYMPATHECTOMY AND PELVIC PAIN

To the Editor:—I have been hesitant about doing sympathectomies for severe dysmenorrhea, in fear of masking the pain of some future acute pelvic condition. Please give me the general consensus as to the safety of either lumbar or presacral sympathectomy during the reproductive period, especially from the standpoint of the effect on symptoms of possible future abdominal (pelvic) crises.

M.D., New York.

ANSWER.—Thus far there have been no reports of acute pelvic or abdominal crises following presacral sympathectomy. This operation will relieve pain which arises in most pelvic organs but by no means all of them. It will eliminate dysmenorrhea and pain due to carcinoma of the cervix, the body of the uterus and the bladder but not pain due to ovarian involvement. Most of the pain due to a ruptured ectopic pregnancy or twisted ovarian cyst is due to an irritation of the visceral and parietal peritoneum. The sensation of this pain is not transmitted through the sympathetic system but through the spinal cord. Hence, presacral sympathectomy may be performed for dysmenorrhea without any concern about the masking of pain in future pelvic and abdominal crises.

DEMONSTRATION OF BENZENE IN URINE

To the Editor:—Would you kindly outline the "urine sulfate test" as used in the detection of benzene intoxication?

M.D., Indiana.

ANSWER.—The test for benzene in the urine is the same as that for phenol. Urine that contains benzene or phenol becomes brown on standing. Benzene and phenol may also be demonstrated by distillation. The urine is strongly acidified with hydrochloric acid and distilled. To the first few cubic centimeters of the distillate is added 10 per cent ferric chloride solution drop by drop, and if phenol or benzene is present there will appear a deep amethyst blue color.

One tenth of the sulfates in the urine appear in combination with aromatic substances such as indole, phenol, benzene and skatole and are called ethereal sulfates. These are tested for by the Obermayer indican test as follows: To one third of a test tube of urine is added one third of a test tube of Ober-

mayer's reagent. To this mixture is added a few cubic centimeters of chloroform. The mixture is warmed slightly before the addition of the chloroform, and the tube is inverted several times to insure proper mixing. If indican is present in excess, the chloroform which settles to the bottom of the tube will assume an indigo blue. Conditions that lead to an excess amount of indican in the urine are diseases of the small intestine, slow flow of bile and absorption of exudates. In the absence of the aforementioned diseases, if there is an increase of indican in the urine, the urine should be distilled and benzene demonstrated in the distillate.

CATARACT AFTER TUBERCULOSIS AND GLAUCOMA

To the Editor:—A patient has a tuberculous condition of the right eye, which was diagnosed clinically and microscopically ten years ago. A few years later glaucoma set in and an iridectomy was performed to relieve tension. Injections directly in the eye were given with no avail. Later there were occasional exacerbations with adhesions developing. Now the lens of the eye is distinctly opaque (cataract formation) and vision is restricted to light perception. The tension of the eye is practically normal. There is considerable pain in the eye. The patient is eager to have the cataract removed. Would this be advisable, in view of the tuberculous history? Would the removal affect the good eye or would it be advisable to remove the entire eye?

DAVID GLASS, M.D., Louisville, Ky.

ANSWER.—If the eye is quite free from active inflammation as shown by freedom from fresh deposits on the cornea and some cells in the anterior chamber, it would probably be the best plan to remove the lens and at the same time to do an iridectomy. There would be some chance that this might stir up an attack of inflammation but it should be possible to control by foreign protein injections and atropine afterward. It is also quite likely that pathologic changes will be found in the fundus or opacities in the vitreous which will prevent a good visual result so that the patient should be prepared for this. There should be no more danger to the good eye than after any operation for cataract, although one should be sure that there is no inflammation in that eye which might be present in spite of the normal vision.

DYEING HAIR

To the Editor:—A patient engaged in the daily practice of dyeing hair has vitiligo and scattered tufts of white hair on the scalp. These tufts fail to take the dye by the same methods used on others. Is this experience unusual? Is there any particular kind of dye which can be tried in such a case? Jackson and McMurtry (Diseases of the Hair, Philadelphia, Lea & Febiger, 1912, p. 359) say that the use of hair dye will conceal this condition. I have not found this point discussed in other textbooks consulted.

M.D., Rhode Island.

ANSWER.—The idea has long prevailed that hair has individuality. One person's hair takes dye much more readily than does another's, although the two may appear of the same texture. One person's hair may color well with vegetable dye and poorly with metallic dye, while hair apparently of the same texture and oiliness on the scalp of another person may give just the opposite reaction, dyeing well with metallic but poorly with vegetable dyes. Even hair in different places on the same scalp may show a difference in respect to dyeing. Gray hair is particularly hard to dye.

Galewsky writes (*Handb. d. Haut u. Geschlechtskr.* **13**:165, 1932) that the beard and scalp hair of the same man will differ in respect to dyeing. Soft fine hair is harder to dye than coarse stiff hair. According to the hardness of the cuticle of the hair, the color will penetrate better and be more lasting. Later growing hair, which has more fat and less keratin, often gives a different color and the same is true of the parts next the scalp as the hair grows out. Variations in sulfur content, the effects of nervous disease, attacks of migraine and circulatory disturbances are thought to affect the ease with which hair can be dyed.

Washing with soap and water is a good preparation for dyeing, and in some instances the use of a weak alkali or of hydrogen peroxide may be a necessary preliminary to the application of the color. Strong defatting agents, ether, benzine or carbon tetrachloride are said to dry the hair too much and make dyeing more difficult.

For the management of the case in question it seems advisable to try different dyes until one is found that will affect the gray hair. Sabouraud's suggestion, that all persons who wish to have the hair dyed should first have the dye tried on a small spot to determine how well the dye takes and whether the individual is sensitive to it, is a good one. When the most suitable dye has been found, the white patches should be dyed first until they approach in color the rest of the hair. A patch which includes both light and dark hair is then dyed and if the result is satisfactory the whole may be dyed. No suggestion as to the particular dye can be made. It should be understood that all dyes are potentially dangerous; but, if the patient insists that the hair be dyed, the dye most familiar to the operator should be preferred if there are several that seem to give good results.

MORTALITY IN APPENDICITIS

To the Editor:—Where can I get get some definite information on the mortality rates in untreated cases of acute appendicitis? Have any such figures been compiled for the period before the advent of appendectomy? Of course, I know that the operative mortality for chronic appendicitis is practically nil and that the mortality for gangrenous appendicitis with peritonitis is about 20 to 25 per cent, depending on the different operators. What I am especially interested in is the mortality figures for appendicitis when no surgical treatment was received at all.

BENJAMIN A. FURMAN, M.D., Newark, N. J.

ANSWER.—Any statistics compiled before the surgical treatment of acute appendicitis would be of no value, because when this condition gradually came to be recognized clinically the patients were frequently operated on. At first only the late cases with peritonitis were diagnosed, many of the patients being moribund. Earlier clinical diagnosis and operation soon led to a reduction of the mortality. It is not infrequent at the present time to see a patient develop peritonitis from a ruptured appendix while under the observation of a physician inexperienced in surgical diagnosis.

Mortality following operation for chronic appendicitis may occur from the common or even unusual postoperative complications, but it increases more directly with the inexperience of the surgeon. In recent years it has been considered to be good practice in many cases of acute appendicitis with perforation and well localized peritonitis to treat without operation. Several months later the appendix should be removed. Other surgeons of wide experience operate in all cases as soon as the diagnosis has been made, with equally good results.

In cases of general peritonitis, Miller and Turner (*Illinois M. J.* **72**:222 [Sept.] 1937) have reported a series treated with and others without operation but are undecided as to the best procedure.

No statistics are available for nonoperative treatment of acute appendicitis, because today in all scientific institutions these patients are operated on before perforation occurs, unless some contraindication exists.

DRIPPING FROM RECTUM

To the Editor:—A farmer, aged 65, has had chronic diarrhea for the last eight months, averaging from six to eight movements a day. He has had also a persistent dripping from the rectum; brownish colored fluid has reached his shoes when he is working. There are no other symptoms. With the use of a bismuth compound the movements have been decreased to one normally formed movement a day; however, the rectal dripping persists throughout the day unabated. The history and physical examination are essentially negative except for obesity and hypotension: 109/75. Please suggest a mode of treatment to stop this dripping.

M.D., Pennsylvania.

ANSWER.—Many serious rectal conditions are associated with "dripping" of the type described. This condition has been noted with various types of proctitis, ulcerative colitis, and even anal neoplastic disease. Sometimes kraurosis ani is accompanied by this condition. Various local applications and injection treatments for kraurosis ani have been used. However, in the inquiry the results of the digital examination or of cultures and examinations of the stools and rectal discharges are not mentioned. Moreover, the appearance of the rectal lining as seen through the proctoscope or the results of roentgenologic examination of the intestine are not given. To suggest treatment without this information would be unwise.

VARIATIONS IN SYSTOLIC BLOOD PRESSURE

To the Editor:—Why is it that, when one takes several successive blood pressure readings without removing the arm band, the first systolic reading is almost always higher than the succeeding ones? What should be taken as the true systolic pressure?

LUTHER W. HIGH, M.D., Millersburg, Ohio.

ANSWER.—There are two reasons for the difference in readings. Even apparently stolid and phlegmatic persons frequently feel some apprehension as the blood pressure is taken and hence the first reading is found at a higher level. Also the muscles of the arm are held tense and constricted, especially if the arm is not in a comfortable position, causing a higher reading. As the patient gains assurance, the arm is relaxed and the muscles do not respond to the increased pressure of the cuff, with involuntary contraction, as at first. Care taken to have the

arm in a comfortable and relaxed position will help obviate a high reading due to muscle tension in some cases.

It is a good plan to record the initial reading and also the last reading after the patient is reassured and relaxed. It gives some idea of how much the patient responds to nervous stimuli.

DIPLOPIA AND STRABISMUS FOLLOWING SPINAL TAP IN SYPHILITIC PATIENT

To the Editor:—A white woman, aged 26, was given a twelve months course of neoarsphenamine seven years ago at the time her her marriage. When I first saw her, nine months ago, she was in the sixth month of her first pregnancy. She was then given weekly injections of a bismuth compound and neoarsphenamine. The pregnancy was uneventful except for a positive cord Wassermann and blood Wassermann test on the baby. The mother's blood Wassermann reaction has remained positive in spite of continued treatment. Three weeks ago I did a spinal tap; the fluid was entirely negative. For a week afterward the patient suffered severely from nausea, vomiting, headache and dizziness on arising. Then she noted diplopia of the right eye and had to cover the eye in order to see clearly. Shortly after this I noted a strabismus, which has persisted together with the diplopia. The other symptoms have cleared up. Examination of the eyes reveals nothing further. Could you explain the mechanism underlying these phenomena? What treatment, if any, should be given? The blood Wassermann reaction of the patient was positive (4 plus) when I first saw her.

M.D., New York.

ANSWER.—As the affected eye muscle is not named, it can only be inferred that either the third or the sixth cranial nerve is involved. In spite of the negative spinal fluid tests there is probably a syphilitic lesion at the base of the brain involving one of these nerves. The upheaval caused by the loss of the fluid cushion has brought about a change in position of one of these nerves, resulting in a partial paralysis. The latter will probably soon subside and may have been a blessing in disguise, as it shows that treatment for neurosyphilis is indicated. In view of the long duration of the syphilis in this case a course of tryparsmide is indicated. It is recommended that only 1 Gm. intravenously be given for the first dose, 2 Gm. four days later, and if the optic nerves show no signs of being affected, 3 Gm. may then be given every week for six doses. After a rest period of a month it will be well to repeat the course even if the strabismus has cleared up. Subsequent treatment will have to be planned according to the condition of the patient.

PHYTOSTEROLS AND PHENYLMETHYL BARBITURIC ACID

To the Editor:—What common plants and animal tissues used for food by human beings contain phytosterols? If phenylmethylmalonylurea is marketed in this country, what is the proprietary name or names?

I. D. CLARK JR., M.D., Fargo, N. D.

ANSWER.—Phytosterols, a group of sterols similar chemically to cholesterol, occur only in plants, where they are found especially in the oils of seeds. Sitosterol is the principal plant sterol of wheat and barley germs, cottonseed oil and laurel oil. Stigmasterol is present in the calabar bean, beet oil, coconut oil, theobroma oil and corn oil, which contains dihydrositosterol also. Phytosterols are not absorbed in significant amounts through the intestinal walls of ordinary laboratory animals and are believed to have no significance in the sterol metabolism of man.

According to available information, phenylmethyl barbituric acid (phenylmethylmalonylurea) is not marketed in this country at the present time.

VISUAL EFFICIENCY AND VISUAL ACUITY

To the Editor:—Why isn't visual acuity equal to visual efficiency? If this is fully answered in any available place, please tell me where. The test chart, American Medical Association rating, has visual acuity and visual efficiency on it. At 1.0, or 20/20 visual acuity, the visual efficiency is 100 per cent. That is the only place where they are equal. At 0.10, or 20/200 visual acuity, the visual efficiency is 20 per cent, just double.

M.D., New York.

ANSWER.—Visual acuity, as expressed by reading of the Snellen charts, describes only the results of examination under the conditions of the test. 20/40, for instance, means only that letters are read at 20 feet which should be read at 40 feet. The committee on estimation of industrial loss of vision in 1925 estimated the loss of efficiency represented by these figures and arrived at the figures given in its report. Most ophthalmologists put in their records the fraction of the Snellen chart, 20/20, 20/40, and so on, and give the industrial efficiency only in reports involving visual loss in industrial cases. These figures describe only loss of central vision; losses of motility or visual field are estimated separately and totaled as described in the report.

ANAL FISSURES IN INFANT

To the Editor:—A baby 6½ months old has fissures circumanally that are entirely outside the mucocutaneous junction. They have appeared and disappeared since shortly after birth. The child has been on a diet of evaporated unsweetened milk and a mixture of maltose and dextrin. It weighs approximately 18 pounds (8 Kg.). Treatment has consisted of keeping the bowel movements soft by regulation of diet and care to keep the child dry at all times. An anesthetic ointment has been used also without much apparent benefit.

M.D., Indiana.

ANSWER.—The treatment for the anal fissures should be satisfactory. While it is stated that care is taken to keep the child dry at all times it is not always possible to do this. It might be advisable to add from one to two heaping teaspoonfuls of boric acid powder to the water in which the diapers are boiled. If the fissures persist they may be treated by touching them with a 5 per cent silver nitrate solution occasionally. This will usually aid in their healing.

AMMONIUM CHLORIDE FOR LONG PERIOD

To the Editor:—Is there any harm that could result from the continuous taking of ammonium chloride (20 grains, or 1.3 Gm., a day) over a long period? The patient is in bed with tuberculosis and has, in addition, a prostatic hypertrophy. The ammonium chloride is used not primarily as an expectorant but to keep the urine acidified. Mandelic acid with the ammonium chloride has been taken from time to time. None, however, is taken now. Please advise.

M.D., Maine.

ANSWER.—Probably no harm would result from taking 1.3 Gm. of ammonium chloride over a long period, but the question naturally arises What is the use? The object in taking the drug is to acidify the urine sufficiently to be bacteriostatic. For this purpose 1.3 Gm. would be quite insufficient in most cases. Unless the p_H of the urine is 5.5 or lower, it would have little or no effect on urinary infection. If this complication is present, sulfanilamide might be tried in a daily total dosage of 2.6 Gm. over a period of a week or ten days. In the presence of residual urine, however, it may be impossible to disinfect the urine and keep it free from bacteria.

EAR AND TEMPOROMANDIBULAR JOINT SYNDROME

To the Editor:—I am interested in the work which Dr. James B. Costen, St. Louis, and others have been doing on the temporomandibular joint syndrome complex. Please let me know your opinion on these observations and whether his conclusions are accepted by a large percentage of physicians. I am interested in the subject from the otologic standpoint.

M.D., Nebraska.

ANSWER.—The work that Dr. James B. Costen of St. Louis has done on the temporomandibular joint syndrome complex has been accepted by many physicians and there is good reason to believe that pains in the region of the ear, and even as far away as the larynx as well, may be due to an arthritis in the joint. On occasion deafness of a eustachian tube type may occur, although some have stated that this condition is a rarity in their experience. Deafness of a more serious and progressive nature is more likely to be due to otosclerosis or auditory nerve degeneration and not to the condition described by Dr. Costen.

There is evidence that some members of the profession have become overenthusiastic and are recommending tedious, time consuming and expensive dental manipulation for the relief of these incurable types of deafness. Tubal catarrh can be treated and cured by inflation, and the associated Costen syndrome can be relieved by proper dental care. Dr. Costen's work should receive respectful attention, but overenthusiasm is to be deprecated and avoided.

STERILIZING SYRINGES WITH ALCOHOL

To the Editor:—I should like information relative to the sterilization of hypodermic syringes and needles by immersion in 70 per cent alcohol. If a syringe should be kept in such a solution in a special container in my kit, would the small amount of alcohol remaining in the syringe interfere in any way with the action of the usual vaccines given (catarrhal, Sauer's, Schick test)?

M.D., Texas.

ANSWER.—The accepted method for preparing the needle and syringe for subcutaneous, intradermal or intramuscular injections is by boiling in distilled water or by autoclave. Most of the usual vaccines and the specific toxins employed in the Schick and Dick tests contain globulins or globulin fractions that might be precipitated or interfered with by alcohol in the syringe. In using certain undenatured bacterial antigens it is specifically recommended that the needle and syringe be sterilized by boiling or hot air, as alcohol or other antiseptics carried into the vial will denature the antigen. Finally, sterilization produced by proper boiling or hot air is probably much superior to sterilization obtainable by using 70 per cent alcohol.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.
ARKANSAS: Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosmunsky, Texarkana.
CALIFORNIA: *Reciprocity.* Los Angeles, July 11, San Francisco, Sept. 14, and Los Angeles, Nov. 16. *Written examinations.* Los Angeles, July 11-14, and Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.
CONNECTICUT: *Medical (Regular).* Hartford, July 12-13. *Endorsement.* Hartford, July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, July 12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.
DELAWARE: Dover, July 12-14. *Reciprocity.* Dover, July 19. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.
DISTRICT OF COLUMBIA: Washington, July 11-12. Asst. Sec., Commission on Licensure, Mr. Paul Foley, 203 District Bldg., Washington.
HAWAII: Honolulu, July 11-14. Sec., Dr. James A. Morgan, 48 Alexander Young Bldg., Honolulu.
IDAHO: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.
ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.
IOWA: *Basic Science.* Des Moines, July 12. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.
MASSACHUSETTS: Boston, July 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.
MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.
NEVADA: *Reciprocity.* Carson City, Aug. 1. *Applications must be completed and on file by July 17.* Sec., Dr. John E. Worden, Capitol Bldg., Carson City.
NEW HAMPSHIRE: Concord, Sept. 15-16. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.
NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.
NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.
OKLAHOMA: *Basic Science.* Oklahoma City, Dec. 7. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City.
OREGON: *Basic Science.* Corvallis, July 16 and Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.
PUERTO RICO: Santurce, Sept. 6-10. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.
SOUTH DAKOTA: Rapid City, July 19-20. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.
WASHINGTON: *Basic Science.* Seattle, July 14-15. *Medical.* Seattle, July 18-20. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners* and *Special Boards* were published in THE JOURNAL, July 2, page 87.

Kentucky Reciprocity and Endorsement Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports nineteen physicians licensed by reciprocity and two physicians licensed by endorsement from Jan. 13 through May 3, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1936)	Ohio
Rush Medical College		(1937)	Wisconsin
University of Illinois College of Medicine		(1931)	Illinois
Indiana University School of Medicine		(1930)	Indiana
University of Louisville School of Medicine		(1929)	S. Dakota
Univ. of Michigan Dept. of Medicine and Surgery		(1898)	Ohio
Columbia Univ. College of Physicians and Surgeons		(1931)	New York
University of Cincinnati College of Medicine		(1924), (1937)	Ohio
Western Reserve University School of Medicine		(1933)	Ohio
Univ. of Tennessee College of Med.		(1923), (1931), (1937, 3)	Tennessee
University of Tennessee Medical Department		(1900)	W. Virginia
Medical College of Virginia		(1925)	Virginia
University of Virginia Department of Medicine		(1931)	Maryland
University of Toronto Faculty of Medicine		(1922)	Michigan

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard University Medical School		(1932)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1933)	N. B. M. Ex.

Tennessee March Examination

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held at Memphis, March 23-24, 1938. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine		(1937)	85.7
Emory University School of Medicine		(1937)	85.7
Tulane University of Louisiana School of Medicine		(1937)	85.5
University of Tennessee College of Medicine		(1938)	81.2, 82.7, 83.2, 83.7, 83.8, 84.2, 84.3, 84.3, 84.4, 84.4, 84.6, 84.7, 84.7, 84.9, 85, 85.2, 85.3, 85.4, 85.6, 85.9, 86.1, 86.3, 87.9, 88.7
Universität Heidelberg Medizinische Fakultät		(1933)	82.5

Three physicians were licensed by endorsement from February 25 through May 2. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Atlanta School of Medicine		(1908)	Alabama
Tulane University of Louisiana School of Medicine		(1936)	Louisiana
Washington University School of Medicine		(1936)	Missouri

New Mexico April Report

Dr. Le Grand Ward, secretary, New Mexico Board of Medical Examiners, reports the written examination held at Santa Fe, April 11-12, 1938. The examination covered 12 subjects and included 90 questions. An average of 70 per cent was required to pass. One candidate was examined and passed. Thirteen physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Chicago Medical School		(1938)	85.7

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1919), (1936)	California
College of Physicians and Surgeons, Los Angeles		(1910)	California
University of Colorado School of Medicine		(1936)	Colorado
Bennett Medical College, Chicago		(1916)	Illinois
Northwestern University Medical School		(1937)	Washington
Indiana University School of Medicine		(1936)	Indiana
Harvard University Medical School		(1934)	N. B. M.Ex.
University of Nebraska College of Medicine		(1936)	Nebraska
Cornell University Medical College		(1930) (1935)	N. B. M. Ex., New York
University of Texas School of Medicine		(1927)	Texas
Regia Università degli Studi di Pavia. Facoltà di Medicina e Chirurgia		(1910)	Missouri

Illinois April Examinations

Mr. Homer J. Byrd, superintendent of registration, Illinois Department of Registration and Education, reports the written examination held in Chicago, April 6-8, 1938. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-eight candidates were examined, forty-three of whom passed and five failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine		(1936)	87*
Northwestern University Medical School		(1937)	84,† 90,† (1938) 86, 86, 87, 89, 89
Rush Medical College		(1936) 86,† (1937)	84, 85,† 86, 86, 86,† 87, 87, 87,† 87,† 89, 89, 90†
School of Med. of the Division of Biological Sciences		(1936) (1937)	90, 84,† 85,† 86,† 89
University of Illinois College of Medicine		(1937)	89
State University of Iowa College of Medicine		(1936)	83†
Johns Hopkins University School of Medicine		(1936)	83
Harvard University Medical School		(1936)	85
University of Michigan Medical School		(1936)	86
University of Minnesota Medical School		(1938)	86
University of Toronto Faculty of Medicine		(1935)	86
Albertus-Universität Medizinische Fakultät, Königsberg		(1937)	83†
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1919) 80, (1925) 85, (1935) 84,	(1936) 85†
Hamburgische Universität Medizinische Fakultät		(1920)	82
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main		(1927)	81
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1912) 76,	(1914) 80
University of Edinburgh Faculty of Medicine		(1931)	85

School	FAILED	Year Grad.
Chicago Medical School		(1937, 2) (1938)
Université de Paris Faculté de Médecine		(1936)
Regia Università degli Studi di Palermo. Facoltà di Medicina e Chirurgia		(1929)

Twenty physicians were successful in the practical examination held for reciprocity and endorsement applicants in Chicago, April 8. The following schools were represented:

School	PASSED	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1925)	Indiana
Emory University School of Medicine		(1936)	Georgia
National Medical College, Chicago		(1897)	Alabama
Northwestern University Medical School		(1930)	Minnesota
Rush Medical College		(1936)†	California

University of Illinois College of Medicine	(1934)	Oklahoma
State University of Iowa College of Medicine	(1919), (1934)	Iowa
Tulane University of Louisiana School of Medicine	(1935)†	Colorado
University of Minnesota Medical School	(1937)†	Minnesota
St. Louis University School of Medicine	(1935)†	Missouri
Washington University School of Medicine	(1936)†	Missouri
Long Island College of Medicine	(1931)	W. Virginia
Ohio State University College of Medicine	(1936)†	Ohio
Memphis Hospital Medical College	(1908)	Texas
Baylor University College of Medicine	(1933)	Texas
Queen's University Faculty of Medicine	(1923)†	W. Virginia

School	PASSED	Year Grad.	Endorsement of
School of Med. of the Division of Biological Sciences		(1937)	N. B. M. Ex.
University of Illinois College of Medicine		(1937)	N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons		(1933)†	N.B.M.Ex.

* This applicant has completed the medical course and will receive the M.D. degree on completion of internship. License has not been issued.

† License has not been issued.

Book Notices

The Biology of Pneumococcus: The Bacteriological, Biochemical, and Immunological Characters and Activities of Diplococcus Pneumoniae. By Benjamin White, Ph.D. With the collaboration of Elliott Stirling Robinson, M.D., Ph.D., and Laverne Almon Barnes, Ph.D. Cloth. Price, $4.50. Pp. 799, with illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1938.

The Commonwealth Fund through (the late) Dr. White and his collaborators has contributed a service to medical science through its publication of this volume, which would be noteworthy even if only because it has set a precedent. As the author points out in the foreword, the motive in writing the book was to "take stock." In this instance the stock taking has been done by men who, while interested in the pneumococcus and pneumonia, have been far enough removed from the work to be unprejudiced. The title aptly describes the contents of the book, although biology, as here described, borders on romance at times. The authors have traced the evolution of our knowledge of the pneumococcus from the first observations by Pasteur and Sternberg to the present day methods of combating pneumococcic infections. It is primarily attractive to the bacteriologist and laboratory scientist, unfortunately less so to the practicing physician. Despite the breadth of the subject the book is well proportioned, including a prodigious bibliography of more than 1,500 references. The style of writing should be a model for more writers of scientific articles. It is unfortunate that the authors did not see fit in writing a book which probably will be a source book for many years to discontinue the use of "Group IV," a term which has always been a misnomer and which has already caused too much confusion. It is again refreshing to find an author who can present controversial matters, fix the issue and arrive at an unequivocal decision without appearing to be arbitrary. The final chapter, on unsolved problems, is a fitting close to a book which starts out to determine "how far the store of the bullion in the cellar is really the solid gold of truth."

Megacolon und Megacystis: Entstehung, Erkennung und Behandlung. Von Dr. Hans Wolfgang Pässler, jetzt Chirurg. Univ.-Klinik Leipzig. Mit einem Geleitwort von Prof. Dr. Wilhelm Rieder, Direktor der Chirurg. Univ.-Klinik, Leipzig. Paper. Price, 15.60 marks. Pp. 172, with 67 illustrations. Leipzig: Johann Ambrosius Barth, 1938.

This is an attractive volume on megacolon and on the large bladder, which in rare cases is found associated with megacolon. Passler has seen the association in three cases and has found reports of some eighteen cases in the literature. The large bladder is likely to be seen only with those cases in which the whole colon, including the rectum, is involved. Passler first reviews the important points in the anatomy, embryology and innervation of the colon and the bladder. He then discusses Hirschsprung's disease in its various aspects. The book is well written and well illustrated. There is much on the surgical treatment of the disease not only by Passler but by many surgeons who have worked in this field. Table 4 shows that of 117 patients with apparently idiopathic megacolon operated on by neurosurgeons thirty-eight were cured, sixty-four were improved and twelve were not helped. Three died sometime after the operation. Passler summarizes briefly thirty different theories as to the cause of the disease. His impression is that all the clinical and experimental observations point to something wrong with the sympathetic nervous system. Passler has not given sufficient prominence to the studies which have shown that Auerbach's plexus is generally absent or much thinned out in that distal part of the bowel which does not dilate. The simplest explanation for megacolon would be an absence of the local nervous system because biologists have shown that when smooth muscle is cut away from its immediate nerve supply it contracts down into a hard knot and stays that way. Actually there is no question that in some of these cases the myenteric plexus is absent. However, the fact that section of the pelvic sympathetic nerves will sometimes bring relief in cases of Hirschsprung's disease makes it appear that there is disease also in the extrinsic nerves of the bowel. Passler states, though, that men who have looked for disease in the ganglions removed at operation haven't seen much change from normal.

Passler divides cases of megacolon into three groups. In one the colon is distended only to the right of the splenic flexure. In this case, perhaps, the defect is in the superior mesenteric plexus of nerves. In the second group the whole colon except the rectum is involved, and Passler's impression is that the inferior mesenteric plexus is diseased. In the third group the whole colon, including the rectum, is enlarged, and here the hypogastric plexus may be diseased. Passler believes that treatment in these three types of cases should be different and that if nerves are cut the extent of the operation should depend on the extent of the disease. He believes that this division is of importance because the cutting of nerves is of value in only certain of the groups and not in others.

The book should be helpful to all those men who are interested in this puzzling disease. They doubtless will want to go back to the original articles in order to study them carefully. Unless a man with much detailed knowledge of the subject notes that one experimenter studied dogs under ether, another studied patients under local anesthesia and another studied cats with an abdominal window or with the roentgenologic technic, he will not be able to reconcile the many differences of opinion which he will find expressed in the many articles on the innervation of the lower part of the colon. The bibliography of nearly 400 titles will doubtless be of much value for all men working in this field.

Text-Book of Ophthalmology. By Sir W. Stewart Duke-Elder, M.A., D.Sc., Ph.D., Surgeon Oculist to H. M. The King. Vol. II: Clinical Methods of Examination, Congenital and Developmental Anomalies, General Pathological and Therapeutic Considerations, Diseases of the Outer Eye. Cloth. Price, $15. Pp. 2,094, with 742 illustrations. St. Louis: C. V. Mosby Company, 1938.

The first of this four volume textbook was reviewed in this column June 24, 1933, with great enthusiasm. Its reception by the ophthalmologic profession was really in the nature of an ovation and the only critical works were the expressed fears that the task of producing the remaining volumes might prove too great or that the lofty standards set in the first volume were too high to be maintained. But the appearance of the second volume has set all those fears at rest. The interval of production is a bit longer than desirable, but it was worth waiting for. The publishers are to be congratulated on the excellence of their production not only from the mechanical standpoint of bookmaking but even more because of the fine illustrations, both black and white as well as colored. The illustrations really illustrate, so that even an undergraduate medical student can grasp the point in question. This volume deals with the clinical methods of examination, congenital and developmental anomalies, and general pathologic and therapeutic considerations of diseases of the eye and specifically of the conjunctiva, cornea and sclera. The material is presented in such a thorough and systematic manner that one marvels at what type man it is who can write so ably. His English is not stilted but flows freely and conversationally and his word pictures of ocular conditions are so descriptive that illustrations are almost unnecessary. Following each entity is a short but comprehensive bibliography that furnishes the key to all that has been written on the topic. Each important chapter is opened by a short outline of the life and work of the ophthalmologist whose name is most intimately connected with the subsequent pages. Von Graefe is naturally

given the place of honor at the beginning of the volume. This new touch in ophthalmic textbooks should prove most stimulating to the younger men who have not yet acquired the leisure to study the history of ophthalmology. It is obviously impossible to deal with individual phases of the work in a short review, for all that the reader wishes to know is what the book is about and whether in the opinion of the reviewer the book is worth while. To the latter, most emphatically, yes. It is the most complete thing that has been produced in English, it contains the last word in modern ophthalmology and it renders entirely unnecessary the long drawn out and never ending handbuchs of the Teutons. Anglo-Saxon ophthalmology owes a real debt of gratitude to Duke-Elder not only for his brilliant research work but even more for his textbook.

Tumeurs intracraniennes: Etude analytique de 2000 tumeurs vérifiées et de leur mortalité opératoire. Par Harvey Cushing, professeur de neurologie à la Faculté de médecine de Yale, New Haven. Edition revue et augmentée par l'auteur et comprenant deux études sur les résultats éloignés du traitement opératoire des tumeurs intracraniennes. Par W. P. Van Wagenen et Hugh Cairns. Traduction française de Jean Rossier. Paper. Price, 80 francs. Pp. 194, with 111 illustrations. Paris: Masson & Cie, 1937.

This is a French edition of "Intracranial Tumours," published by Charles C. Thomas, Springfield, Ill., in 1932. The book passed through a German edition in 1935, to which an abstract of a study of 149 cases of brain tumor eight years after operation by Dr. W. P. Van Wagenen of Rochester, N. Y., was appended. In the present edition a second study by Mr. Hugh Cairns of London of 157 other cases from eight to nine years after operation has been added. These two studies attempting to assess not only the actual postoperative survival period in months but the economic and social status of the patients during this period as well are valuable additions to this work. The original monograph by Dr. Cushing has been little changed. This monumental record of the surgical achievements of one man is thoroughly familiar to all interested American and English neurologists and neurosurgeons. It must be gratifying to all American members of the profession to have it made available to our German and French speaking colleagues. This monograph consists essentially of the surgical-mortality statistics of the various types of tumors of the brain and with the two appendixes cited, which have been added to this edition, a statistical study of the ultimate prognosis in a more limited group of cases as well. That this record represents the final achievement of neurosurgery the author would be the first to deny. But it does represent a definite goal which all neurosurgeons will seek to achieve and if possible surpass. The book will prove useful not only to surgeons of the brain but to all members of the profession confronted with the puzzling problems of tumors of the brain. This edition is well printed; the illustrations, apparently prepared from Mr. Thomas's original plates, are well reproduced.

Sickness and Insurance: A Study of the Sickness Problem and Health Insurance. By Harry Alvin Millis, Professor of Economics, The University of Chicago. Cloth. Price, $2. Pp. 166. Chicago, Illinois: University of Chicago Press, 1937.

In general, this discussion of health insurance is more impartial and gives greater consideration to the attitude of the medical profession than the majority of the writings by the advocates of health insurance. There is one important qualification of this judgment. The reports of the Committee on the Costs of Medical Care are accepted unreservedly, with the specific statement that "there has been general acceptance and little but praise of the fact-finding done." On the contrary, it is just the technic used in the "fact-finding" and the accuracy of the alleged facts concerning the basic features of amount and distribution of illness and medical care that have been most sharply challenged. The quotation from the Committee on the Costs of Medical Care (page 152) that "thousands of persons are sick and dying in this country because the knowledge and facilities that we have are inadequately applied" is a good example of the misleading statements of the committee. No effort is made by either the committee or the author to show that fewer persons "are sick and dying" in any country where insurance has been applied. The program offered by the author, however, is much less sweeping and impracticable than is usually proposed. "It includes (1) an extended and improved public health service; (2) an amended Social Security Act so as to provide cash benefits for wage-earners when disabled by sickness as well as when unemployed because of lack of work; (3) appropriate tax-supported medical care for special groups; and (4) organized medical care of persons in the lower-income groups when involved in high-cost illness, with the costs met by compulsory insurance contributions and tax revenues."

Third Symposium on Silicosis. An Official Transcript of the Third Silicosis Symposium Held in Connection with the Trudeau School of Tuberculosis at Saranac Lake, N. Y., June 21 to 25, 1937. Edited by B. E. Kuechle, Vice President and Claims Manager, Employers Mutual Liability Insurance Co., Wausau, Wis. Paper. Price, $3. Pp. 266, with illustrations. Wausau, Wis., 1937.

This is the official transcript of the third symposium on silicosis, held in connection with the Trudeau School of Tuberculosis at Saranac Lake, N. Y., June 21 to 25, 1937. The symposium consisted of thirteen lectures, which in their entirety deal with all aspects of silicosis, from etiology to the administrative problems involved. Following each paper is a discussion in which the author frequently expresses an opinion not noted in the paper. For example, Dr. Sayers was asked whether disablity from silicosis could be measured physiologically before x-ray diagnosis had been made, to which he replied in the negative. The final diagnosis depends on the degree of disability, on the x-ray appearance and on other physical observations. The progressive tendency of the disease after removal from dust exposure was brought to the attention of all by Dr. Sayers, who referred to the works of Bohme and Russell. In this country most workers dealing with the silicosis problem accept the opinion that uncomplicated silicosis is not an incapacitating disease but is the menace that it is because it specifically predisposes to tuberculosis. The pathology, pathologic physiology, roentgenology, clinical picture and control methods from medical, engineering and legal aspects are ably presented and discussed. The book represents much of the latest and best thought on silicosis. Worthy of favorable comment is the fact that this transcript is indexed. The first two transcripts (1933 and 1935) were not indexed.

The Compleat Pediatrician: Practical, Diagnostic, Therapeutic and Preventive Pediatrics for the Use of Medical Students, Internes, General Practitioners, and Pediatricians. By Wilburt C. Davison, M.A., D.Sc., M.D., Professor of Pediatrics, Duke University School of Medicine, Durham, N. C. (Adaptation of the Title Page of The Compleat Angler by Izaak Walton, 1653.) Second edition. Cloth. Price, $3.75. Pp. 276. Durham, N. C.: Duke University Press, 1938.

The second edition of this cross index pediatricus has profited by the experimental presentation of the first. The first edition suffered in usefulness to the student and the general practitioner because its inclusive material was offered in a too brief and staccato manner. The present form of presentation really gives a portrait of the subjects discussed. The style consists of a running description, and the eye is not so much distracted by the large cross reference numbers. The page is divided into two columns, further adding to readability. Conforming to the original, this edition numbers the subjects but not the pages. The number of sections has been reduced by combining the material in groups. For instance, the 329 pediatric diseases have been gathered into 133 groups, the 164 signs and symptoms into ten paragraphs and the 213 laboratory tests and therapeutic technics into thirty-three divisions. New sections on growth, development, nutrition and infant mortality have been added. The entire subject matter has been divided into thirteen instead of the original seven chapters, conforming more closely to the conventional textbook. At the same time an enormous amount of detailed information has been compressed into the 250 sections, replacing the original 1,957. As in the first edition, the last numbered section does not indicate the number of sections in the book. For instance, the chapter on laboratory procedures ends with section 207, while the next chapter begins with 213. In fact, the curious but consistent omission of six between the numbers of sections ending one chapter and beginning the next puckers the brow and kindles an interrogative flash of the eye. Why? By this omission there are really 178 sections in the

book by reason of twelve hexajumps instead of the printed 250. The mathematical nature of this review so far merely reflects the mathematical framework on which this volume pins its text. This statement is at once an explanation and an apology, because it is impossible to do justice to the mass of specific and authoritative information compressed between the flexible covers of this book. Frequent editions assembling and assaying the mass of pediatric literature accomplished so successfully and effectively should be welcomed because no doctor can do justice to himself in the field of pediatrics without this notebook-library of pediatrics. Although the composition of the encyclopedia is still unique, the reader will be gratified to find this quality somewhat sacrificed for greater clarity and availability. Before it was a short cut for the professor. Now even a student will find it useful. Abstaining from the excesses of originality in which he indulged his first edition, the author has sobered his performance temperately.

Les embolies artérielles des membres. Par H. Haimovici. Préface de MM. R. Leriche et J. Fiolle. Paper. Price, 55 francs. Pp. 336, with 25 illustrations. Paris: Masson & Cie, 1937.

This monograph should be translated into English. It is such a splendid piece of work, complete in every detail—with one possible exception—that it ought to be available to every one. Starting out with a brief preface by Leriche and his colleague Fiolle, wherein they make the point that this is the first analytic research devoted to arterial embolism of the limbs —to which the author devoted two years—the book first gives a short historical review, followed by a study in etiology; three fourths of the cases followed cardiac disease. Next comes a chapter devoted to symptomatology, following which there is an extensive clinical study wherein many illustrative cases are cited. In the chapter on diagnosis the author calls attention to the fact, which others have noted, that arterial spasm may, under certain circumstances, simulate an embolism. In the section devoted to pathology, numerous satisfactory photomicrographs are found. The most interesting section, devoted to treatment, is divided into two parts, the first being nonsurgical, in which various drugs such as acetylcholine are used, and the second being surgical, with chief emphasis on surgery. Embolectomy, arteriectomy, sympathectomy, anastomosis and ligations and, finally, amputation are considered in the order named. The time element is most important in considering an embolectomy. If more than from ten to twelve hours has elapsed from the time the embolus has occurred, operation is contraindicated. In certain later cases arteriectomy may be helpful. The only real criticism to be made is that Dr. Haimovici fails even to mention the passive vascular exercise method of treatment. This is unfortunate, because it may well be that passive vascular exercise will eventually supplant all other methods of treating embolic accidents to peripheral arteries. There is an extensive bibliography.

Report on the Assistance of Indigent Patients Suffering with Epilepsy. The Minnie Frances Kleman Memorial Fund. The Department of Nervous and Mental Diseases, Northwestern University Medical School, Chicago, Illinois. Cloth. Pp. 567, with 9 illustrations. Ann Arbor, Mich.; Edwards Brothers, Inc., 1936.

This work is planned to indicate work done and the opportunity for great discoveries if more funds are granted. The book opens with facsimiles of letters indicating that the chairman of the department presents to a medical "liaison officer" a report on the "assistance of indigent patients suffering with epilepsy." The liaison officer then writes that he has the honor to transmit the report to the dean of the medical school, and finally the dean forwards the report to the bank from which the funds came, including a request that the description of patients be kept strictly confidential. Later in the volume are sixty-five pages of clinical descriptions. On page 65 is the statement "Certainly we feel that nowhere else in America is there opportunity for study of epilepsy comparable to this." There are photographs of the medical school and of various bits of apparatus, clinic benches and hospital beds. It is also stated that research in epilepsy such as reported could be done only by a great university and certainly not by an independent hospital or research institute. This study concerned three groups of patients totaling ninety-six individuals. The usual classification of the epilepsies and etiologic concepts is followed. It is said that tubular vision is common in epileptics, which is surprising. All the body fluids were examined with the usual negative results. Surgical treatment is used when indicated to remove scars. A ketogenic diet, bromides and phenobarbital are successfully prescribed and dehydration is discarded —all in accordance with general experience. Auras are ascribed to excitation of the brain stem in opposition to the usual view that they arise from the cortex, but the evidence is not conclusive. As a scientific treatise the value of this report lies in reiteration of what is already well known.

Los ruidos cardíacos en condiciones normales y patológicas. Por Oscar Orías, doctor en medicina, director del Instituto de fisiología y profesor de fisiología de la Facultad de ciencias médicas de Córdoba (Argentina), y Eduardo Braun-Menéndez, doctor en medicina, jefe de investigaciones del Instituto de fisiología y adscripto a la Cátedra de fisiología de la Facultad de ciencias médicas de Buenos Aires. Paper. Pp. 279, with 127 illustrations. Buenos Aires: El Ateneo, 1937.

For several decades following Laënnec's invention of the stethoscope there was a rich output of literature concerning the sounds of the heart. Experimental, clinical and postmortem observations were drawn on to explain the mechanism and meaning of normal and pathologic sounds. Since the advent of the x-rays and the electrocardiograph the subject has been presented from a new point of view. Graphic studies of the heart sounds by direct phonocardiographic methods and especially with electrical amplification have come to the front. This volume is the result of experimental and clinical study along these lines. Technic is described. The mechanism and graphic registration of normal sounds are well considered. In the last part more than a hundred pages is devoted to sounds in pathologic states —valvular lesions, gallop rhythm and various disturbances of rhythm. Many excellent illustrations, most of them original, help to explain the text. There is a good bibliography. The work is appropriately dedicated to Houssay and Wiggers. Whether the tendency to employ electrophonocardiography in everyday practice will develop until its use is widespread can only be determined by time. This book will be found a useful help by those interested in the subject.

X-Rays and Radium in the Treatment of Diseases of the Skin. By George M. MacKee, M.D., Professor of Clinical Dermatology, New York Post-Graduate Medical School and Hospital, Columbia University. Third edition. Cloth. Price, $10. Pp. 830, with 310 illustrations. Philadelphia: Lea & Febiger, 1938.

This edition, almost entirely rewritten, amounts to a brand new, authoritative guide in the treatment of diseases of the skin with x-rays and radium. It embodies virtually all present knowledge of this subject and the book should be a "bible" for all dermatologists and for all other physicians, as well as technicians, who undertake the treatment of the various dermatoses with these agents. In order to reflect all aspects of the subject authoritatively, a noteworthy list of collaborators have written or brought down to date certain chapters of the book. These include new chapters on physics, biology, apparatus and instruments by Edith Quimby, a careful revision of the medicolegal chapter by Harold Bouton, an excellent and complete revision of the chapters on psoriasis, lichen planus and the hemopoietic diseases by Dr. Fred Wise, the action of roentgen rays and radium on animal organs and tissues by Dr. Arthur U. Desjardins, an excellent new chapter on histopathology by Dr. Hamilton Montgomery of the Mayo Clinic, a revision of the chapters on x-ray technic by Dr. Anthony Cipollaro, a complete revision of the chapter on fungous diseases by Dr. George M. Lewis, revision of the chapter on the pyodermas and other work by Dr. Henry D. Niles, and a thorough revision of the chapter dealing with miscellaneous disorders by Dr. Franklin Grauer. All obsolete material has been eliminated from this edition and it can be safely stated that it is practically impossible to offer any adverse criticism in the compilation of this excellent volume. Each chapter has a bibliography appended, from which the investigative student can readily obtain all the pertinent literature on any desired branch of the subject. The text is clearly and concisely written throughout, and the style is uniform in spite of the rather large number of contributors. Credit is given where credit is due throughout the text. As stated,

this book has no competition and is now even much better in every respect than its previous editions; in fact, it is so far superior to its previous editions that no dermatologist, at least, can afford to be without it.

Recent Advances in Pathology. By Geoffrey Hadfield, M.D., F.R.C.P., Professor of Pathology in the University of London, and Lawrence P. Garrod, M.A., M.D., B.Ch., Professor of Bacteriology in the University of London. Third edition. Cloth. Price, $5. Pp. 420, with 65 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1938.

The title of this book might well be changed to "Recent Advances in the Scientific Phases of the Practice of Medicine." Seventeen chapters cover in terse and easily understood language the newly acquired information on resistance to infection, the reticulo-endothelial system, cancer research and therapy, deficiency diseases, cardiovascular and renal diseases, the respiratory tract, the digestive system and liver, the central nervous system and the ductless glands. Every student of medicine, young or old, should be acquainted with the facts which are here so admirably condensed and clarified. Even recent graduates from medical schools may profit by such a review, and for older practitioners and those specializing in the laboratory divisions of medicine the book is a real vade mecum. As is inevitable in such a work, certain important omissions might be mentioned, particularly Goldblatt's work on experimental hypertension, recent developments concerning so-called vitamin K, the modern classification of the gliomas, and others which readers in various laboratories will conclude deserve more notice than has been given. However, it is doubtful whether any similar review in any phase of medical science will be found to be as complete as this one. The illustrations are carefully selected and splendidly reproduced. They are so valuable an adjunct to the text that readers would welcome more of them, particularly if colors could be used. A useful bibliography is given at the end of each chapter.

Poulsson's Text-Book of Pharmacology and Therapeutics. Second English edition thoroughly revised by Stanley Alstead, M.D., M.R.C.P., Physician to Out-Patients at the Western Infirmary of Glasgow. Cloth. Price, 25s. Pp. 557, with 29 illustrations. London: William Heinemann, Ltd., 1938.

Poulsson from 1895 to 1928 was a distinguished professor of pharmacology at Oslo. The eleventh edition of his textbook (in German) was published in 1937. It has been a popular textbook in Scandinavian and German universities for many years. The second revised English edition is based on the recent British and United States pharmacopeias. The plan followed is typical of "the continental atmosphere" and follows rather closely after Schmiedeberg's Grundriss der Pharmakologie. The book is perhaps too brief on the theoretic side and too limited in the discussion of recent developments. Ethylene, propylene and cyclopropane occupy but half a page, while curarine receives two pages. Acetylcholine is not mentioned, nor the adrenergic or cholinergic theories of nerve impulse. In the discussion of digitalis the chemistry is omitted and the term aglucone is not mentioned, and no mention of standardization is made. A mistake is made in the translation of β-imino azolylethylamine by calling it histidine instead of histamine, which might indicate that the translater did not desire to add to or emphasize the chemical side of the subject. In the discussion of acids, no mention is made of hydrogen ion concentration or acidosis. The discussion of ferments and foodstuffs is brief and hormones are not mentioned. The book as a whole is reliable and conservative but not so modern or inspiring as present conditions demand.

In the Name of Common Sense: Worry and Its Control. By Matthew N. Chappell, Ph.D. Cloth. Price, $1.75. Pp. 192. New York: Macmillan Company, 1938.

The author began his professional career in engineering; later he became a Ph.D. in psychology and, because of his own neurosis, became interested in emotions. At present he is director of a private "group psychological research." According to the author, worry is a luxury and increases with practice and decreases with lack of practice. Exercises are presented to enable patients to shift from unpleasant to pleasant thoughts, thus breaking the habit of worry. Emotion can be willed away. This book has been written for the lay person by a lay person whose only degree in academic psychology does not deter him from assuming the role of physician to the mentally ill. His lack of understanding of human psychologic problems and naiveté in his confidence seem colossal. Yet his therapeutic exercises carried out with neurotic groups may in short periods of time give help to a large group of patients unable to afford the time or expense of rational therapy, for his methods are those of reassurance and "covering up" particularly adapted in group therapy. Such a confident leader can sometimes exert a strong temporarily beneficial effect on neurotic groups.

Die Fasern des Nervus vagoaccessorius beim Menschen und bei Säugetieren. Von Doz. Dr. Julius Botár, Georg Popják und Dr. Alexander Bense. Acta litterarum ac scientiarum Reg. Universitatis Hung. Francisco-Iosephinae, Sectio medicorum, Tome VIII, Fasc. 2. Redigunt: J. Baló, D. Miskolczy et St. Rusznyák. Paper. Price, 6.60 marks. Pp. 97-229, with 108 illustrations. Budapest: Eggenbergersche Buchhandlung Karl Rényi; Leipzig: Johann Ambrosius Barth, 1937.

This monograph is concerned with the anatomy, both gross and microscopic, of those nerve fibers which arise from the nervus accessorius and join with the vagus and which these authors have termed the nervus vagoaccessorius. The description of the structure of these nerves in the cat has been written by Bense, in the dog by Popják and in the monkey, chimpanzee and man by Botár. They conclude that the structure of these nerves as to the roots of origin, the main trunk and its branches does not differ materially in man and the various animals investigated.

On a New Gland in Man and Several Mammals (Glandulæ Parathyreoideæ). By Ivar Sandström. [Upsala Läkareförenings Förhandlingar, 1879-80, 15, 441-471.] Translated by Carl M. Seipel, Dr. Med. Dent. Edited by Charlotte H. Peters and J. F. Fulton. With biographical notes by Professor J. August Hammar. Boards. Price, $1. Pp. 44, with 4 illustrations. Baltimore: Johns Hopkins Press, 1938.

Here is a careful translation of Sandström's pioneering work on the parathyroid, made by a fellow countryman who is now a graduate student in medicine. The article itself is of interest to all endocrinologists, histologists and anatomists. It is a classic contribution, for the first time completely translated from the Swedish. Combined with it is a biographic note by Prof. August Hammar, which includes a letter from Sandström to his sister describing the reception of presentation of this discovery at a scientific meeting and pertinent references to earlier work on the parathyroid. The book has been carefully edited by two persons thoroughly appreciative of medical history.

Las arritmias en clínica (diagnóstico, pronóstico y tratamiento). Por el Doctor Antonio Battro. Paper. Pp. 476, with 201 illustrations. Buenos Aires: El Ateneo, 1937.

This volume is much more than a reprint of the first edition of the author's work on the arrhythmias, published in 1933. There has been a thorough revision of the chapters on the theories of the irregularities, and the clinical features have been much expanded. The work is well gotten up, with numerous illustrations, especially of electrocardiograms that are of help in making clearer the meaning of the text. Diagnosis and treatment are given due prominence. Those who found the volume of 1933 of service will find this one still more helpful.

Nutrition of the Infant and Child. By Julian D. Boyd, B.S., M.S., M.D., Associate Professor of Pediatrics, State University of Iowa, Iowa City. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, $3. Pp. 198, with 40 illustrations. New York: National Medical Book Co., Inc., 1937.

This monograph is an excellent summary of nutrition in pediatrics. The author writes as a physician who has not been swamped by the flood of foolishness poured out in commercial claims for various foods and vitamins. The critical and analytic spirit permeates this little volume chapter by chapter. The contents are divided into sections on the principles of nutrition, foods for the normal infant and child, and nutrition during illness. The text is well illustrated by reproductions of photographs. In a comparatively few pages at the end, practical diet lists and schedules are provided for a range from normal infant feeding to specific diabetic diets. The last section alone is

worth a place in any man's library for quick reference. In general, this little volume on nutrition in pediatrics is recommended to medical students and general practitioners. If properly interpreted by the glib group of the gossipy school of food faddists, it constitutes a subtle rebuke.

Synopsis of Genitourinary Diseases. By Austin I. Dodson, M.D., F.A.C.S., Professor of Genitourinary Surgery, Medical College of Virginia, Richmond, Virginia. Second edition. Cloth. Price, $3. Pp. 294, with 112 illustrations. St. Louis: C. V. Mosby Company, 1937.

This is an excellent compact presentation of practical phases of genito-urinary problems which should appeal to the student or busy practitioner. Current advances in the fields of calculi, malignant conditions, neurogenic disturbances and functional disturbances of the male sexual system bring the subject matter down to the present.

Miscellany

HEARING BY BONE CONDUCTION

GEORGE E. COLEMAN, B.S.
SAN FRANCISCO

People who are hard of hearing frequently complain that rapid strides are being made in the prevention and cure of many other diseases but "nothing is ever done for us." Deafness of whatever type presents one of the most baffling problems confronting medical science. Much has been accomplished in the past in the way of laying the foundations for accurate knowledge concerning the organ of hearing and the changes that occur in disease. Since the American Otological Society organized a research bureau and other smaller "funds" have provided grants to various universities, the pessimism is beginning to be dissipated. Otologists, anatomists, physiologists, neurologists, pathologists, psychologists, physicists and acoustical engineers have initiated well integrated programs either alone or in collaboration with one another and even between departments of different universities. Otologic research is now making stupendous progress, especially in the United States and Canada. During the International Congress of Otolaryngologists held at Prague the remark was frequently made that since American investigators are making such advances Europe will have to look to its laurels. The advent of the electrical hearing aid has proved a boon to those who are able and willing to use one. Many as yet refuse this boon and continue their complaints against science. This period will pass; in the years to come more millions will accept this aid. First came reception by air conduction, then by bone conduction. Each has brought in its train new medical and physical problems which are now receiving intensive investigation. I refer chiefly to the standardization of audiometers, to possible injury due to excessive amplification of air borne sounds, and to possibilities of reeducation, by the judicious use of a proper instrument, either of a not too degenerated or damaged end organ in the cochlear duct or of receptors for hearing in the brain. The time is not yet here, however, when salesmen of hearing aids should permit themselves to discuss these matters pseudoscientifically with prospective clients.

The phenomenon of hearing by bone conduction has been known for many centuries. Recently a wide interest in the subject and its more technical problems has become awakened. The attention given to bone conduction during the meeting of the American Otological Society in Detroit in May 1936 did much to stimulate interest.

Especially new are some painstaking studies which occupied three years, made by Norman Watson[1] in the laboratory of Professor Knudsen in the University of California. After a comprehensive survey of previous investigations and the types of vibrators used in them, a special induction type electrodynamic vibrator of wide frequency range and large output, linear in response and as free as possible from stray sound radiation, was designed and built. This was combined with a suitable driving system and calibrations were then obtained on both by apparatus specially designed for the purpose. Then a few of the problems of hearing by bone conduction were studied.

One of the problems to which Watson has given consideration concerns cranial resonance and a study of the vibrating skull. The cranium has been found to vibrate somewhat like an elastic spherical shell at 1,000 cycles but to deviate from such vibrations in certain particulars. The relative magnitudes of vibration at different portions of the skull have been determined. While injury to the inner ear from cranial resonance at high intensities seems possible, Watson believes that such injury is not apt to be caused by the less intense vibrations produced by commercial hearing aid bone conduction units.

A method of determining bone conduction thresholds has been developed which is capable of high accuracy. In the case of one observer, at a single frequency, a series of measurements has been obtained with an average error of a single observation of only 1.1 decibels. This is decidedly encouraging. I have had frequent hearing tests over a period of years by different observers using the same audiometer and by the same observer using different instruments and there have been wide fluctuations in the results, beyond the probability of corresponding changes in hearing threshold. An eminent European otologist who recently visited this country stated that, until audiometers are more carefully standardized, more accurate determination of hearing threshold could be obtained with tuning forks. Watson has studied the threshold at various positions on the skull and teeth under varying conditions and has determined that bone conduction hearing is most acute when the mouth is closed, the teeth are clenched and the ear canals are occluded. The lowering of the threshold on occlusion of the ear canals has been found to be a real phenomenon at frequencies as high as 10,000 cycles.

The effect of certain factors, such as the total force of the vibrator button on the skin and the size of the button, have been determined and correlations made between the positions of maximal vibration on the skull and positions of the vibrator to give the greatest acuity. For the present at least the amplitude of vibration of the vibrator button, placed on the center of the forehead, has been found to be the most satisfactory unit of measurement of bone conduction thresholds, although the actual acuity at this position is 10.5 decibels lower than when the vibrator is placed on the upper teeth.

Other problems studied by Watson are the tentative determinations of the limits of audition of pure tones by bone conduction (open ear canals), both as to usable intensity range and as to the total frequency range. A method for testing the hearing of speech by bone conduction has been developed which is based on that of Fletcher and Steinberg for air conduction testing. Application of this method to Watson's own hearing (slightly above average) indicated that for all levels above threshold up to 85 decibels the articulation was the same whether he listened by air conduction (one ear or two) or bone conduction (open or occluded ear canals). This points to the conclusion that the hearing of speech by bone conduction may attain as high a degree of perfection as that attained by the more usual method of air conduction.

With these and the continuing studies on selective amplification in the laboratory of Dr. Knudsen and active research elsewhere, the hard of hearing as a group may well take further encouragement.

From the Hooper Foundation, University of California.

1. Watson, N. A.: Hearing of Speech by Bone Conduction, J. Acoustical Soc. America **9**: 99 (Oct.) 1937; Limit of Audition for Bone Conduction, ibid. **9**: 294 (April) 1938.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals: Right to Determine What Physicians May Perform Surgery on Premises.—The Marlboro County General Hospital was established and maintained from funds solicited from the public at large. The trustees of the hospital, who were selected by the contributors, procured a charter from the state and adopted rules for the regulation and control of the hospital. The appellant, a licensed physician, alleging that those rules deprived him of the privilege of practicing surgery in the hospital, sought by legal action to have the hospital declared a public hospital and to require the trustees to revoke the rules which excluded him from practicing in it. The trial court dismissed the action, and the physician appealed to the Supreme Court of South Carolina.

It is conceded, said the court, that if the Marlboro County General Hospital is a private institution the action instituted by the appellant must fail. The court held that the hospital, although a public charity, was a private corporation, and quoted from *Dartmouth College* v. *Woodward,* 4 Wheat. 518, 671, 4 L. Ed. 629, as follows:

> When, then, the argument assumes, that because the *charity* is public, the *corporation* is public, it manifestly confounds the popular, with the strictly legal, sense of the terms. . . . When the corporation is said, at the bar, to be public, it is not merely meant, that the whole community may be the proper objects of the bounty, but that the government have the sole right, as trustees of the public interests, to regulate, control and direct the corporation, and its funds and its franchises, at its own will and pleasure. Now, such an authority does not exist in the government, except where the corporation, is in the strictest sense, public; that is, where its whole interests and franchises are the exclusive property and domain of the government itself.

The action of the trial court in dismissing the physician's complaint was accordingly affirmed.—*Strauss v. Marlboro County General Hospital (S. C.), 194 S. E. 65.*

Optometry: Corporate Practice of Optometry Illegal; Injunction to Restrain Practice.—The defendants, a firm of opticians, sold eyeglasses on prescriptions by registered physicians and optometrists. Most of the prescriptions filled by the defendants were issued by a physician employed by them in their place of business at a weekly salary. The price charged was the same whether the customer brought his own prescription or obtained one from the physician employed by the defendants. The price was retained in whole by the defendants. The plaintiff, a registered optometrist, "for his own benefit, for the benefit of other optometrists, and for the benefit of the public," brought suit to restrain the defendants from practicing optometry without being registered under the optometry practice act of Massachusetts. The case was reported, without decision, to the Supreme Judicial Court of Massachusetts on an agreed statement of facts.

The optometry practice act of Massachusetts provides that in order to practice optometry a person must possess certain educational qualifications, pass an examination and be registered. Physicians and surgeons lawfully entitled to practice medicine in the state are exempted from the provisions of the act. The defendants contended that they were not practicing optometry illegally because their servant, who was a physician, was entitled to practice optometry without registration.

There is, said the Supreme Judicial Court, a generally recognized rule that a licensed practitioner of a profession may not lawfully practice his profession as a servant of an unlicensed person or a corporation and, if he does so, the unlicensed person or corporation employing him is guilty of practicing that profession without a license. A corporation cannot possess the personal qualities required of a practitioner of a profession. Its servants, though professionally trained and duly licensed to practice, owe their primary allegiance and obedience to their employer rather than to the clients or patients of their employer. This rule recognizes the necessity of immediate and unbroken relationship between a professional man and those who engage his services. It has been applied to lawyers, physicians and dentists. While recognizing a conflict of authority, the court was of the opinion that the greater weight of authority held that optometry constitutes a profession rather than a trade. Abnormalities of the eye sometimes indicate and often result in serious impairment of the general health. The learning and the ethical standards required for optometry and the trust and confidence reposed in optometrists by those who employ them cannot be dismissed as negligible or as not transcending the requirements of an ordinary trade. In this connection the court pointed out that section 72 of the optometry practice act of Massachusetts declares that "No optometric practise or business . . . shall be conducted under any name other than that of the optometrist or optometrists actually conducting such practise or business." The court interpreted this provision to prohibit, as a general rule, the practice of optometry by a layman or a corporation through servants who are registered optometrists. An exception to the general rule in the statute, which provides that the statute shall not "prevent the employment by any person of a registered optometrist to be in charge of, or practice optometry in, an optical department conducted by such person," was not applicable to the case in question. The servant employed by the defendants did not come within that exception because he was not a registered optometrist but a physician. The court therefore concluded that the defendants were practicing optometry without right.

Accordingly, a decree was granted restraining the defendants from practicing optometry, either personally or by any servant or employee, until they should become lawfully entitled to do so. —*McMurdo v. Getter (Mass.), 10 N. E. (2d) 139.*

Workmen's Compensation Acts: Hemorrhage into Eye in Relation to Strain and Tuberculosis.—In the course of his employment the claimant drew off seed beans from a hopper into sacks and then piled the sacks, each weighing from 112 to 150 pounds, on a truck, the top sack being placed at a height of from 3½ to 4 feet. On Dec. 27, 1935, after he had stooped to lift one of the sacks he noticed that objects appeared red when he looked at the light and it seemed as if there were red streaks "of stuff" through his left eye. When he did not look at the light "it looked like a bunch of moss wove around through" the eye. Three days later he consulted an eye specialist, who found "an extensive recent hemorrhage on the interior of his left eye," with approximately 80 per cent impairment of vision of that eye. His right eye was practically normal. The claimant continued at work and on January 9 his physician found a hemorrhage in the right eye also. Shortly thereafter roentgenograms disclosed an old healed tuberculosis in his lungs. The impairment of vision grew progressively worse and eventually the claimant became permanently and totally blind in both eyes.

In the course of the proceedings instituted by the claimant under the workmen's compensation act of Wyoming there was medical testimony to show that the walls of the blood vessels in his eyes had been weakened by the old tuberculosis; that strain, lifting, walking hard, jarring the body or even excitement would produce such hemorrhages as he sustained; that the strain of lifting the sacks in the course of his employment would be such as would cause the hemorrhages; that a person suffering from weakened blood vessels in the eye as a consequence of an old healed tuberculosis might safely go through life without any impairment of vision if he was careful in all physical movements, and that a person of the claimant's age, if the blood vessels in his eyes were normal, would not be affected by hard labor or the strain of lifting sacks such as those he lifted. All the physicians who testified at the trial agreed that a person would notice a hemorrhage into the eyeball within a few seconds after it occurred, as when such a hemorrhage takes place "the light of any light appears red." There was no definite evidence, however, regarding the time when the claimant first noticed hemorrhages in his right eye. The trial court found that the strain in lifting the sacks caused the bursting of the blood vessels of his eyes and that he had sustained a compensable accident under the Wyoming workmen's compensation act. He

was awarded compensation for permanent and total blindness in both eyes and the employer appealed to the Supreme Court of Wyoming.

The employer contended that there was not sufficient evidence on which to base the finding that the claimant suffered an accidental injury on Dec. 27, 1935, as a result of his employment, because his blindness was caused by disease not ensuing from any injury suffered in his employment and he was doing only his usual work when the difficulty occurred. The Supreme Court, however, concluded that the claimant had suffered a compensable accidental injury and that, so far as the right to compensation was concerned, the fact that the blood vessels in the claimant's eyes were abnormally weak, whether congenitally or from disease, made no difference. Compensation, said the Supreme Court, under the Wyoming compensation act does not rest on the condition of health of the employee or on his freedom from liability to injury through a constitutional weakness or latent tendency. The Supreme Court concluded, however, that the trial court erred in making the award when it took into account the condition of the claimant's right eye, since there was no testimony to indicate when the hemorrhage in it occurred. The burden was on the claimant to show that he suffered a compensable injury in the right eye before an award could be legally made for such an injury.

The Supreme Court accordingly affirmed the judgment of the trial court so far as it awarded compensation for loss of vision in the left eye and reversed it so far as it undertook to make an award for the loss of vision in the right eye. The court directed a new trial of the issues as to the injury to the right eye.—*In re Scrogham: Associated Seed Growers, Inc., v. Scrogham (Wyo.), 73 P. (2d) 300.*

Medical Practice Acts: Issuance of License Without Examination Discretionary with Licensing Board.—Section 924 of the Delaware code, a section of the Delaware medical practice act, *requires* the medical council to license an applicant who has passed an examination given by the appropriate board of medical examiners. It provides that the medical council *may*, on the recommendation of the board of medical examiners, without further examination, license an applicant who has been examined and approved by the National Board of Medical Examiners and has complied with certain other conditions not here material. A certificant of the National Board of Medical Examiners instituted mandamus proceedings against the medical council to compel it to license her, without examination, to practice medicine. She contended that it was the duty of the medical council to license an individual who had been examined and approved by the National Board of Medical Examiners, claiming that the word "may," italicized above, meant "must" or "shall" and was not used in a permissive sense. The superior court of Delaware, New Castle, however, concluded that the legislature intended to give the medical examining boards and the medical council discretionary powers with respect to applicants who have not passed the usual examinations. The petition for a writ of mandamus was therefore dismissed.—*State ex rel. Foulger v. Layton (Del.), 194 A. 886.*

Workmen's Compensation Acts: Sarcoma of the Sternum Attributed to Trauma.—The deceased, a janitor, in the course of his employment in the spring of 1935, stumbled. His chest struck a box he was carrying and the box defaced a desk top, but although he reported the incident to his superior he did not mention the fact he had hurt himself. That night, however, he told his wife of the occurrence and complained that "his chest was hurting him awful bad," but he continued to work. About three weeks later his wife noticed a red spot on his chest about the size of a dollar. He then consulted a physician, who described the injury as "a hard protuberance, tumor like." Shortly thereafter the deceased informed his employer of his injury. For about fourteen months longer the workman continued at work. The protuberance continued to grow. In March 1936 roentgenograms showed a growth on the chest and bone destruction of the breastbone and cartilages of the ribs. Apparently a diagnosis of sarcoma of the sternum was made at that time. On June 6, 1936, the growth, which had developed to the "size of a baby's head," was removed by surgery. Thereafter the workman was confined to bed until his death in September 1936. Compensation was awarded to his widow under the Kansas workmen's compensation act, and the employer and his insurance carrier appealed eventually to the Supreme Court of Kansas.

His widow testified as to what the deceased told her when he returned home from work on the night when the accident was alleged to have occurred. The attending physician testified that the fall and injury, in his opinion, caused the condition that eventually developed into a sarcoma of the breastbone. The physician who had taken the roentgenograms of the deceased's chest in March 1936 testified that the tumor could have come from the injury in the spring of 1935. The physician who removed the growth from the deceased's breastbone testified that the tumor resulted from the injury. Nevertheless the employer and insurance carrier, appellants, contended that there was no competent evidence that an accident in the course of the deceased's employment caused his death and called an expert witness who testified that "sarcoma malignancies" are not traceable to trauma in more than 2 per cent of the cases or even less; but he added:

> The important thing is the establishment of the fact of a trauma, and finding within this tissue or that immediately adjacent to the . . . periosteum and the structure of the bone or immediately adjacent to the point of the alleged injury, evidence of the injury. If in such a tissue anywhere from four weeks to a year or even more a malignancy develops, I believe it would be considered due to trauma.

The Supreme Court of Kansas held that the evidence was sufficient to prove the occurrence of the accident and its causal relation to the death.

The appellant assigned error in the admission of the testimony of the widow as to what the deceased had told her the night he was hurt. The admissibility of evidence before the compensation commission, said the Supreme Court, is to be governed not by the venerable rules of evidence but under the liberal rules applicable to hearings before that commission. The courts may not nullify the commissioner's work by applying their own standards to it; if the commissioner's decision is based on substantial and satisfactory evidence, relevant, reasonable and persuasive, though not technically admissible under the rules of evidence governing procedure, the decision will be upheld. The true rule as to the admissibility of the evidence before the compensation commission, the court thought, was as follows: Where a workman dies of his injuries, the statements he made to third persons touching the accident which caused his injuries may be received and accorded probative force, if such statements are inherently reasonable and not intentionally made for the purpose of being used as evidence to base a claim for compensation, and where the other evidence and attendant circumstances corroborate the statements so convincingly as to establish the fact of the workman's accident and injury with moral certainty. Tested by this rule, said the Supreme Court, the testimony of the widow was properly received.

The award of compensation in favor of the widow was accordingly affirmed.—*Parker v. Farmers Union Mut. Ins. Co. (Kan.), 73 P. (2d) 1032.*

Society Proceedings

COMING MEETINGS

National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.

Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.

Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Washington State Medical Association, Bellingham, Aug. 29-31. Dr. V. W. Spickard, 1303 Fourth Ave., Seattle, Secretary.

West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.

Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

15: 515-642 (May) 1938

*Comparison of Percussion and Radiography in Locating the Heart and Superior Mediastinal Vessels. D. Mainland and C. B. Stewart, Halifax, N. S., Canada.—p. 515.

*Injection Plus Dissection Study of Coronary Artery Occlusions and Anastomoses. M. J. Schlesinger, Boston.—p. 528.

Role of Nutritional Deficiencies in Production of Cardiovascular Disturbances in the Alcohol Addict. R. Goodhart and N. Jolliffe, New York.—p. 569.

Study of Myocardial Hypertrophy of Uncertain Etiology, Associated with Congestive Heart Failure, with Consideration of Role of Antecedent Hypertension. B. I. Kaplan, E. Clark and C. E. de la Chapelle, New York.—p. 582.

Abnormal Distribution of Superficial Muscle Bundles in the Human Heart. Jane Sands Robb and R. C. Robb, Syracuse, N. Y.—p. 597.

Effect of Digitalis on Form of Human Electrocardiogram, with Special Reference to Changes Occurring in the Chest Lead. H. J. Stewart and R. F. Watson, New York.—p. 604.

Percussion and Radiography.—Mainland and Stewart studied by percussion the deep dulness of the heart and the superior mediastinal vessels of 110 male university students when erect and when recumbent. Wire markers were then fastened to the chest and teleradiographic films were taken. All results were analyzed statistically. In these students the mean errors (difference between percussion and x-ray borders) were less than 1 cm. in most intercostal spaces; but much greater allowance for possible error had to be made in percussion of any one subject; for example, there was a range of more than 3.5 cm. in the fourth left intercostal space in students in the erect position. The differences in error between the erect and the recumbent position could be largely attributed to dispersion of x-rays. For practical purposes the variation between two percussions on the same student was as great as between different students, because the correlation between the errors in repeated percussions of the same students, although significant, was low. From one third to one half of the variation in the cardiac (but not the superior mediastinal) region was attributable to diaphragmatic movement, it being impossible to secure the same midphase of respiration on any two occasions. The risk of wide error in any individual percussion could be greatly lessened by taking the average of several independent readings, thereby reducing the effect of diaphragmatic movement. Stature, weight and size or shape of the chest had no important relation to the percussion error. Ten students, taken at random, sufficed to show the difference in error of two experienced physicians. Each observer should know his own percussion error.

Coronary Artery Occlusions and Anastomoses.—To ascertain accurately the site and effects of all occlusions and anastomoses of the coronary artery in individual hearts Schlesinger found that it was necessary to devise a method capable of completely and simultaneously visualizing the entire course of all arterial branches so that they could be studied in detail. This has been accomplished by a simple standardized method utilizing (1) a newly devised multicolored radiopaque injection mass, (2) a new method of cutting open the injected heart and (3) a complete dissection of the colored coronary artery tree. The new injection mass consists of a suspension of lead phosphate in agar, colored differently for the right and left coronaries. It is injected at 150 mm. of mercury pressure, at 45 C.; it sets quickly and permits immediate cutting and roentgenography of the fresh unfixed heart. The new method of opening the heart unrolls all the coronary arteries so that they lie in one plane and avoids overlapping of the roentgenographic shadows of the injection mass within them. The distribution of the multicolored mass in the branches of the dissected coronary artery gives an absolute index of the distribution of the blood from either orifice of the coronary artery.

American Journal of Diseases of Children, Chicago

55: 897-1140 (May) 1938

*Rheumatic Erythema Nodosum. A. Wallgren, Göteborg, Sweden.—p. 897.

Metabolism and Mode of Action of Vitamin D: III. Importance of Liver for Its Antirachitic Efficacy. W. Heymann, Cleveland.—p. 913.

*Results of Collapse Therapy in Children with Pulmonary Tuberculosis. M. Siegel, New York, and Bella Singer, Elizabeth, N. J.—p. 924.

Pathogenesis and Treatment of Myotonia Congenita: Further Observations. H. G. Poncher and Helen Woodward Wade, Chicago.—p. 945.

Insensible Loss of Weight in Infancy: Findings for Forty-Six Infants Under Basal Conditions. J. L. Law, with assistance of W. G. Frederick, Ann Arbor, Mich.—p. 966.

Diagnosis of Syphilis in Newborn Infants: Use of Quantitative Wassermann Tests. A. U. Christie, Baltimore.—p. 979.

Mentality of Infants Relieved of Hydrocephalus by Coagulation of Choroid Plexuses. T. J. Putnam, Boston.—p. 990.

Pathology of Chronic Arthritis of Children (Still's Disease). R. B. Portis, Chicago.—p. 1000.

The Undescended Testicle. N. Nixon, Los Angeles.—p. 1037.

Rheumatic Erythema Nodosum.—Wallgren points out that investigators have been disinclined to give up the idea that in certain cases there may exist a connection between erythema nodosum and rheumatic fever, even though in general erythema nodosum rests on a tuberculous basis. A rheumatic etiology is quite compatible with the present conception of its pathogenesis. Rheumatic erythema nodosum should, in the first place, be sought among those who react negatively to tuberculin. In certain cases existing tuberculous infection need not be the cause of erythema. For instance erythema nodosum following an attack of tonsillitis in a tuberculous child may be due to the tonsillitis and may have no connection with the tuberculous infection. In such a case, however, strong reasons should be adduced in support of the assumption that the tuberculosis is not the producer of the erythema, and the first condition is to prove that the tuberculous infection is inactive and obviously older than the erythema. Tuberculous erythema usually occurs when the tuberculous infection manifests itself. The only cases in which a genesis other than tuberculosis can be proved are those in which the reaction to tuberculin remains negative during other acute infections. Hence it follows that one may consider rheumatic fever as the cause of erythema nodosum only on condition that the child is not infected with tuberculosis. For the correct interpretation of the pathogenesis of the erythema a child should always be examined for tuberculosis when he has acute rheumatism during which erythema nodosum appears.

Collapse Therapy in Tuberculosis.—Siegel and Singer present the results obtained by artificial pneumothorax and by other means of collapse therapy employed between 1928 and 1936 for 105 children from 5 to 15 years of age with open pulmonary tuberculosis. The sputum of all these children contained tubercle bacilli, and a cavity was visible in the roentgenogram in 95 per cent of the cases. The predominant clinical types seemed to have begun either as isolated infiltrative tuberculosis, usually in the infraclavicular region with a tendency to cavitation and bronchogenic dissemination, or as bilateral disseminated tuberculosis, apparently the sequela of a benign hematogenous seeding, with a tendency to the formation of nodular-cirrhotic productive lesions with or without small cavities. In addition, there were far advanced bilateral forms, usually with bilateral cavities. Forty children improved, thirty-three remained unimproved and thirty-two died. Conversion to negative sputum was obtained by means of pneumothorax alone in twenty-one of twenty-eight children within three months and in all twenty-eight children within six months after the start of collapse therapy. Moderate or large amounts of pleural effusion developed in the course of pneumothorax in twenty-eight cases. Tubercle bacilli alone were found in nine cases, pyogenic organisms and tubercle bacilli in four cases and pneumococci in one case. The fluid was resorbed in only two of the thirteen cases in which either tuberculous or mixed infections were present. After collapse therapy, 60 per cent of the patients with isolated infiltrative tuberculosis (unilateral) improved, of those with infiltrative tuberculosis (with contra-

lateral spread) 22 per cent improved and 29 per cent of those with disseminated tuberculosis improved. With a small amount of collapse (less than 50 per cent) 15 per cent of the patients improved, with a moderate amount (from 50 to 75 per cent) 30 per cent improved and with a large amount (over 75 per cent) 50 per cent improved. The best results were obtained among the children with unilateral isolated infiltrative tuberculosis in whom a large amount of collapse could be obtained. Regression of the contralateral process was seen in only 12 per cent of the cases in which bilateral lesions were treated on one side only, while progression occurred in 53 per cent of these cases. Unilateral collapse therapy is inadequate in such cases and collapse on both sides is required. By means of bilateral collapse therapy the number of improved children increased. Internal pneumolysis, in patients with broad, extensive adhesions, was rarely successful and was attended with considerable danger. Several children improved after thoracoplasty. Most of the deaths among the treated children occurred within the first two years after the initiation of therapy, after which relatively few children died. Most of the deaths were due to the progression of the disease on the contralateral side or because the process was too far advanced at the start of therapy. Of eighty-seven untreated children with open lesions admitted to the hospital between 1929 and 1936 and observed to date 95.4 per cent died, 1.1 per cent are unimproved and 3.4 per cent are improved.

American Journal of Hygiene, Baltimore

27: 493-742 (May) 1938. Partial Index

Mosquito Studies on the Ilha de Marajó, Pará, Brazil. H. W. Kumm and O. Novis.—p. 498.
Immunity in Monkeys that Have Remained Symptomless Following Injection with Poliomyelitis Virus. J. F. Kessel and F. D. Stimpert, Los Angeles.—p. 516.
Immunologic Comparison of a Los Angeles Strain of Poliomyelitis Virus with the M. V. Strain. J. F. Kessel, F. D. Stimpert and R. T. Fisk, Los Angeles.—p. 519.
Sex Differences in Trends of Tuberculosis Mortality. C. C. Dauer, Washington, D. C.—p. 538.
Malaria and Anopheline Survey of Grenada, British West Indies. F. M. Root and J. Andrews, Baltimore.—p. 549.
Pathogenicity of Strain of Small Race Endamoeba Histolytica. W. W. Frye and H. E. Meleney, Nashville, Tenn.—p. 580.
*Analysis of 520 Cases of Pellagra Reported in California from 1928 to 1935. C. E. Smith and Ida May Stevens, San Francisco.—p. 590.
Limitations to Control of Helminth Parasites in Egypt by Means of Treatment and Sanitation. J. A. Scott and C. H. Barlow, Cairo, Egypt.—p. 619.
Relative Frequency of Ring-Stage Plasmodia in Reticulocytes and Mature Erythrocytes in Man and Monkey. R. Hegner, Baltimore.—p. 690.
Frequency of Rheumatic Manifestations Among the Siblings, Parents, Uncles, Aunts and Grandparents of Rheumatic and Control Patients. Frances E. M. Read, A. Ciocco and Helen B. Taussig, Baltimore.—p. 719.

Pellagra in California.—A questionnaire form has been sent by the California State Department of Public Health to each physician in the state reporting a case of pellagra since 1928. Of 627 cases reported as pellagra from 1928 to 1935 Smith and Stevens chose 520 for analysis. The criterion for inclusion was the presence of a dermatitis compatible with this diagnosis. Pellagra reported in California has been of the severe type, as is shown by the high incidence of diarrhea, oral lesions, dementia or other manifestations of the nervous system. Dementia and other symptoms of the nervous system occurred most frequently in the alcoholic patients. Only one tenth of the cases were recurrent, and recurrences were approximately three times greater in dietary than in alcoholic pellagra. Morbidity rates increased progressively from youth to old age with a mean age of 49.79 ± 0.43 years. One half of the cases occurred in the 40 to 59 age group. There were twice as many male as female pellagrins in the alcoholic group but in the other classifications there were more females than males. Pellagrins of native white stock born in California were mainly addicted to alcohol, while those born in other states were for the most part in the dietary deficiency and antecedent illness groups. One half of the cases developed during the four months February through May. The disease was predominantly urban, and the cheap rooming house sections of the cities contributed the majority of the cases. The approximate mortality was 66 per cent; patients more than 50 years of age had the highest. Of the 146 pellagrins with dementia, diarrhea and oral lesions 92 per cent died.

American Journal of Medical Sciences, Philadelphia

195: 577-716 (May) 1938

Problems Relating to Invasive Properties of Hemolytic Streptococci and Their Control by Sulfanilamide. W. T. Longcope, Baltimore.—p. 577.
*Studies in Diabetes Mellitus: VI. Mortality and Longevity of Diabetics. E. P. Joslin, Boston; L. I. Dublin and H. H. Marks, New York.—p. 596.
Creatine Tolerance Test in Differential Diagnosis of Graves' Disease and Allied Conditions. A. R. Sohval, F. H. King and Miriam Reiner, New York.—p. 608.
Coexistence of Myxedema and Pellagra in the Same Patient: Report of Two Cases. J. A. Greene, Iowa City.—p. 618.
*Spectrographic Determination of Lead in Blood from Normal Human Subjects. G. H. Scott and J. H. McMillen, St. Louis.—p. 622.
*Etiologic Importance of Fatigue and Prognostic Significance of Monocytosis in Neutropenia (Agranulocytosis). P. Reznikoff, New York.—p. 627.
Optic Atrophy in Pernicious Anemia. R. H. Kampmeier and E. Jones, Nashville, Tenn.—p. 633.
The Course of Hypertensive Heart Disease; in Relation to Gross Arteriosclerosis. N. Flaxman, Chicago.—p. 638.
*Specific Dermatoses Due to Vitamin A Deficiency. J. B. Youmans and M. B. Corlette, Nashville, Tenn.—p. 644.
Periarteritis Nodosa: Report of Case Diagnosed Clinically and Confirmed by Necropsy. B. P. Sandler, New York.—p. 651.
Relationship of Sydenham's Chorea to Other Rheumatic Manifestations. Lucy Porter Sutton and Katharine G. Dodge, New York.—p. 656.
Blood Cultures After Tonsillectomy. H. Southworth, New York, and C. G. Flake, Boston.—p. 667.
Oxygen Want and Intracranial Pressure: Preliminary Report. J. Michelsen and J. W. Thompson, Boston.—p. 673.
Control of Gastric Acidity in Peptic Ulcer by Alkalized Powdered Skimmed Milk Tablets. P. H. Wosika, Chicago.—p. 676.
Subcutaneous Emphysema Complicating Bronchial Asthma: Report of Case and Analysis of Seventeen Previously Reported Cases. L. Rosenberg and J. Rosenberg, Brooklyn.—p. 682.

Mortality and Longevity in Diabetes Mellitus.—Joslin and his associates constructed life tables based on diabetic patients treated at the Baker Clinic from 1897 to 1928 and traced to 1929. The tabulations have been made in the same manner as those in insurance work. There has been a continuous decline in the death rate of diabetic patients. The death rate at all ages in the latter part of the period surveyed, 1926 to 1929, was 75 per cent below that of the first part, 1897 to 1913. The gains have been greatest in young diabetic patients. The decline in mortality was most rapid after insulin came into use. Large increases in the expectation of life have occurred. At the age of 10, the increase between 1897-1913 and 1926-1929 is estimated at about thirty years. The increase is progressively less with advancing age. The death rate in diabetes is still much in excess of that for the general population.

Lead in Blood of Normal Human Subjects.—Scott and McMillen examined spectrographically samples of blood of eighty-nine normal first year medical students for traces of lead. Forty-four blood samples failed to show traces of lead in quantities of 0.001 mg. or more per hundred cubic centimeters. The other forty-five samples of blood contained from 0.001 to 0.009 mg. of lead per hundred cubic centimeters of whole blood.

Fatigue and Monocytosis in Neutropenia.—In order to determine the relative importance of etiologic factors Reznikoff studied the thirteen cases of neutropenia admitted to the hospital during the last five years. Fatigue previous to the onset of illness was found to be a prominent predisposing factor in eleven of the thirteen cases. No inquiry was made as to this fact in two cases. Drugs were known to be of etiologic significance in nine cases and in the other four no evidence of drug administration could be elicited. Menstruation was a factor in the case of three of the nine female patients; six women had passed the menopause. Infection was of possible etiologic importance in six cases; in four no history of infections could be elicited and in three no previous infection was found. Analysis emphasizes the importance of fatigue as a precursor to neutropenia when this factor is considered. A perusal of the literature indicates many cases of agranulocytosis in which fatigue, worry and sleeplessness were sufficiently marked to call the attention of the physician to this factor. Of the thirteen patients, nine recovered, and all had sustained relative, and in most cases absolute, monocytosis. In many of the cases an increase of monocytes preceded the return of neutrophils, the rise in leukocyte count, the drop in temperature or the symptomatic improvement. Two of the four patients who died showed a progressive decrease in monocytes and one was reported to have had an

increase from 0 to 20 per cent just before death. The fourth patient presented an atypical picture. The clinical diagnosis at necropsy was aplasia of the bone marrow or acute leukemia and chronic neutropenia. Two days before death a count of 30 per cent monocytes was reported. The patients who recovered had monocyte peaks ranging from 17 to 66 per cent and in all cases the monocytosis was sustained for several days. To be significant monocytosis must occur early in recovery and persist.

Dermatoses Due to Vitamin A Deficiency.—During the last two years Youmans and Corlette observed a number of patients with an eruption which they believe is due to vitamin A deficiency. Twenty cases have been studied in detail. So far as the authors are aware, their cases are the first instances in white persons to be reported in this country. In most of these this deficiency was due simply to an inadequate diet. In a few cases the deficiency was conditioned by disease leading to a decreased intake, an improper absorption or an increased demand for the vitamin. The horny or gooseflesh type of eruption, the similarity of the lesions, grossly and histologically, to those described by Frazier and their response to treatment with vitamin A identify these conditions as a specific dermatosis due to vitamin A deficiency. Grossly, the individual lesions resemble in many, but not all, respects the acne papule, with the important exception as noted by Loewenthal and by Frazier and Hu, that pustulation is uncommon. The eruption has occurred in adults well past the acne age, without a history of or scars of preexisting acne, and the affected areas (arms, legs and back) are those less commonly involved by acne. Histologically, the lesions have differed from the other type only in a slightly greater cellular reaction. The eruption has disappeared following the administration of vitamin A. Although the changes in the eye and in vision have been thought to be the earliest reliable clinical manifestations of vitamin A deficiency, the authors' observations as well as those of Frazier and Hu suggest that in some instances the cutaneous eruption may be the first clinical evidence of the deficiency. These changes are easily recognizable. The time required for the eruption to disappear under the influence of treatment with vitamin A is of practical importance. Improvement is seldom noted in less than four weeks, and in many instances from twelve to fourteen weeks is required before the eruption has disappeared. The prolonged response of the eruption to treatment is a factor which must be taken into consideration when the response to treatment is considered in the diagnosis.

American Journal of Ophthalmology, St. Louis

21: 487-604 (May) 1938

Cysts of the Margin of the Eyelid. A. Hagedoorn, Amsterdam, Netherlands.—p. 487.
Role of Transfusion in Ophthalmology. W. G. Frey, New York.—p. 491.
Genesis of Cyclitic Membrane. H. D. Lamb, St. Louis.—p. 503.
Divergence Insufficiency: Clinical Study. A. deH. Prangen and F. L. P. Koch, Rochester, Minn.—p. 510.
X-Ray Studies of Nasolacrimal Duct. E. W. Spackman, Philadelphia.—p. 518.
Treatment of Detachment of Retina by Use of Thermophore. H. M. Langdon, Philadelphia.—p. 525.
Studies on Infectivity of Trachoma: VIII. Biology of Infectious Agent. L. A. Julianelle and R. W. Harrison, St. Louis.—p. 529.
Tenon's-Capsule Transplants in Surgery of Ocular Muscles, with Especial Reference to Postoperative Deviations with Adhesions Between Muscles and the Eyeball. C. Berens, New York.—p. 536.

American Journal of Orthopsychiatry, Menasha, Wis.

8: 185-408 (April) 1938

Orthopsychiatry: Fifteenth Year. G. J. Mohr, Chicago.—p. 185.
Mechanism and Psychoanalytic Theory. J. Goldstein, New Haven, Conn.—p. 192.
Social Maturity and Stability of Nondelinquents, Protodelinquents and Delinquents. F. Brown, Minneapolis.—p. 214.
Analytic Character of Rorschach Ink Blot Test. J. Vaughn and Othilda Krug, Cincinnati.—p. 220.
Case Studies in Reading Disability. R. A. Young, Boston.—p. 230.
Follow-Up Study of Woodworth-House Mental Hygiene Inventory. P. L. Harriman, Lewisburg, Pa.—p. 255.
Problems of Short Time Psychotherapy. R. A. Fuerst, Chicago.—p. 260.
Constructive and Destructive Tendencies in Children: Experimental Study: Further Report. N. W. Ackerman, New York, with technical assistance of Virginia Rehkopf.—p. 265.
Attitudes, Emotional and Physical Symptoms Commonly Associated with Menstruation in 100 Women. A. Louise Brush, Greenwich, Conn.—p. 286.
Study in Cause and Prevention of Functional Mental Disease. F. W. Dershimer, New York.—p. 302.

American Journal of Physiology, Baltimore

122: 275-546 (May) 1938. Partial Index

Urea Clearance of Cats with Diabetes Insipidus. L. E. Farr, K. Hare and R. A. Phillips, New York.—p. 288.
Comparison of Tissue Metabolism in Normal, Spayed, Spayed-Thyroidectomized and Hypophysectomized Female Rats. J. Victor and Dorothy H. Andersen, New York.—p. 296.
Comparative Study of Gross and Microscopic Effects of Follicle Stimulating Hormone and Anterior Pituitary Sex Hormone on Rat Testis. H. S. Rubinstein and H. M. Radman, Baltimore.—p. 319.
Prevention of Adrenalin Lung Edema by Alarm Reaction. H. Selye, Montreal, Canada.—p. 347.
Effect of Thyroidectomy on Pancreatic Diabetes in Cat. F. C. Dohan and F. D. W. Lukens, Philadelphia.—p. 367.
Endogenous Nitrogen and Basal Energy Metabolism Relationships in Hypophysectomized Rats. U. S. Ashworth and G. R. Cowgill, New Haven, Conn.—p. 373.
Reduction of Experimental Polycythemias by Liver Administration. J. E. Davis.—p. 397.
Dietary Management of Albino Rats Before and After Thyroparathyroidectomy. Mary C. Patras, E. A. Galapeaux and R. D. Templeton, Chicago.—p. 409.
Life Cycle of Red Blood Cell in Dog. W. B. Hawkins and G. H. Whipple, New York.—p. 418.
Metabolism and Body Temperature of Normal and Adrenalectomized Rats During Exposure to Cold. G. C. Ring, Boston.—p. 435.
Relation of Adrenal Cortex to Carbohydrate Metabolism. A. Grollman, Baltimore.—p. 460.
*Blood Pressure Studies on Infants. R. A. Woodbury, M. Robinow and W. F. Hamilton, Augusta, Ga.—p. 472.
*Changes with Age in Blood Pressures in Adult Men. W. H. Lewis Jr., New York.—p. 491.
Seasonal Variations in Normal Polymorphonuclear Count in Man. J. MacLeod.—p. 520.
Excitability of Hypothalamus After Degeneration of Corticifugal Connections from Frontal Lobes. H. W. Magoun, Chicago.—p. 530.

Blood Pressure of Infants.—Woodbury and his colleagues carried out the present study in order to measure accurately the blood pressure at birth, to establish a reliable method for clinical use in measuring the blood pressure of the newborn, to study the effect of certain drugs and to record the pressure changes that occur under various physiologic and pathologic conditions. Thirty-seven babies were observed: twenty-four were apparently normal, the mothers of eight of the infants had toxemias of pregnancy and five infants were prematurely born. The blood pressures, with the use of the hypodermic manometer, of the twenty-four full term babies averaged 80/46 mm. of mercury. The standard deviation of a single observation was 8.1 mm. (systolic) and 8.2 mm. of mercury (diastolic). The infant's blood pressure was not significantly affected by obstetric anesthesia, by the onset of respiration, by the clamping of the cord after birth or by the administration of carbon dioxide and oxygen to the baby. The infant's blood pressure was affected slightly but significantly by the blood pressure level of the (normal) mother, by toxemia of pregnancy in the mother, by amyl nitrite administered to the baby and by 0.2 mg. of epinephrine administered intravenously. It was markedly affected by crying, by dehydration without collapse, by administration of fluid to the dehydrated baby and by the degree of prematurity.

Age and Blood Pressure.—Lewis determined the blood pressure of 100 men, twenty in each decade from 40 to 89 years of age. There was also a man of 91 and one aged 101. The measurements were made with a mercury manometer by the auscultatory method. The subjects were in a basal state—at rest in bed, in the morning, having fasted fourteen hours. The systolic pressure rose continually after the age of 40, but the greatest rise was observed after the age of 65. At the age of from 40 to 44, the average pressure was 116 mm.; at the age of from 60 to 64 it was 124 mm. At the age of from 85 to 89 it was 158 mm. For the two men over 90 the pressure was actually lower. The scatter of individual measurements was greater in the older groups than in the younger. The deviation from the mean in the various age groups was somewhat greater in the elderly. The largest standard deviation was 26.5 mm. in the men aged from 85 to 89 years, the smallest 8.4 mm. in those aged from 45 to 49. The level of the median of the systolic pressure increased gradually with age. The level of the mean of the systolic pressure rises with increasing age. The general trend of the systolic pressure is a rise and is directly related to age. But the mean values, if taken by five or ten year periods, present not a straight line relation but a curvilinear one. There is first a gradual rise from 40 to 64 years and then a rapid rise from 65 to 89 years. After 89 years there

is apparently a fall. The average diastolic pressure varied slightly in succeeding decades. The mean value in the five year groups ranged from 75 mm. of mercury (at from 65 to 69 and 70 to 74 years) to 85 mm. (from 80 to 84 years); in the ten year groups it varied between 75 and 80 mm. The extent of scatter was approximately the same at all ages; it was smallest in the period from 40 to 49 years. The standard deviation, ranged from 6.4 mm. (8.2 per cent) to 12.8 mm. (15.5 per cent). The standard deviation was smaller at ages 45 to 54 years than in other groups. The relation to age follows an uninflected horizontal line. The average mean pressure in succeeding five and ten year classes presented an increase with age. The rise was similar to that of the systolic pressure but modified by the constancy of the diastolic pressure. The average mean pressure in those aged from 40 to 44 years was 96 mm. A slight rise occurred up to 55 years, a more marked rise after 75 years. As with the systolic and the mean pressures, the relation of the pulse pressure to age is represented more accurately by a curvilinear regression with significant inflections beginning at the sixtieth year.

Archives of Neurology and Psychiatry, Chicago

39: 885-1126 (May) 1938

Electroencephalography: IV. Localization of Seizure Waves in Epilepsy. H. H. Jasper, Providence, R. I., and W. A. Hawke, Toronto, Canada.—p. 885.
Differential Features of "Cerebellar" and "Vestibular" Phenomena in Macacus Rhesus: Preliminary Report Based on Experiments on 300 Monkeys. A. Ferraro and S. E. Barrera, New York.—p. 902.
Sensory Discrimination in Monkey, Chimpanzee and Man After Lesions of Parietal Lobe. T. C. Ruch, J. F. Fulton and W. J. German, New Haven, Conn.—p. 919.
Dystonia Musculorum Deformans: Clinicopathologic Study. C. Davison and S. P. Goodhart, New York.—p. 939.
Acid-Base Balance of Blood in a Patient with Hysterical Hyperventilation. J. H. Talbott, S. Cobb, F. S. Coombs, M. E. Cohen and W. V. Consolazio, Boston.—p. 973.
*The Ayala Index. N. Savitsky and M. M. Kessler, New York.—p. 988.
New Series of Anticonvulsant Drugs Tested by Experiments on Animals. H. H. Merritt and T. J. Putnam, with technical assistance of Dorothy M. Schwab, Boston.—p. 1003.
Astereognosis Associated with Tumors in Region of Foramen Magnum. J. E. Rubinstein, New York.—p. 1016.
The Laurence-Biedl Syndrome Occurring in a Brother and Sister. T. K. Rathmell, Norristown, Pa., and M. A. Burns, Philadelphia.—p. 1033.
Somatotopic Localization in Extrapyramidal System. S. P. Goodhart and B. H. Balser, New York.—p. 1043.
Pathogenesis of Encephalitis Occurring with Vaccination, Variola and Measles. K. H. Finley, Boston.—p. 1047.
Role of Vitamin C in Metabolism of Nerve Tissue. H. Wortis, S. B. Wortis and Frances I. Marsh, New York.—p. 1055.

The Ayala Index.—Savitsky and Kessler analyzed the clinical value of the Ayala index, on the basis of 186 readings in 181 cases in which cerebrospinal fluid hypertension measured at least 140 mm. of water. The Ayala index is usually computed as the product of the final intracranial pressure and the amount of spinal fluid removed divided by the initial pressure. Like any other method of investigation, the index is merely an aid and cannot be considered as a conclusive diagnostic procedure. It must be evaluated in the light of all the other signs. Indexes of between 1 and 5 favor the diagnosis of an expanding lesion, such as tumor or abscess. Indexes of between 5 and 6 are equivocal and cannot help in deciding between hydrocephalus and an expanding lesion. When the index is above 6.5 one is probably not dealing with an expanding lesion. The quantity of spinal fluid removed should be constant—the authors suggest 10 cc. Expanding lesions tend to produce low indexes and all other groups high indexes. The index has been found to be of greatest value in the diagnosis of abscess of the brain, especially in its differentiation from otitic hydrocephalus. The Ayala index has been helpful in diagnosis in more than 90 per cent of the cases. The results in the series have been constant. The Ayala index is of no value in the diagnosis of tumor after operation. The indexes in the postoperative series were almost all high; when preoperative indexes were available they were always relatively low. From a few cases of subdural hematoma it was learned that when the Ayala index is over 7, or even over 6.5, the likelihood of a subdural hematoma is less. In 87 per cent of forty-one cases of hypertensive vascular disease, the Ayala index was above 5.5. The index is of especial value in such cases, for occasionally an expanding lesion coexists with hypertensive vascular disease. When the Ayala index is low, especially below 5, it is probable that a tumor of the brain with hypertensive vascular disease exists. A high Ayala index is found in cases of uncomplicated arterial hypertension associated with increased spinal fluid pressure.

Archives of Physical Therapy, Chicago

19: 257-320 (May) 1938

Intermittent Venous Occlusion in Peripheral Vascular Disease: Study of Its Physiologic Mechanism and Therapeutic Effects. W. S. Collens, N. D. Wilensky and H. Ginsberg, Brooklyn.—p. 261.
Effect of Arteriovenous Shunt in Peripheral Vascular Disease. K. Harpuder, I. D. Stein and J. Byer, New York.—p. 272.
Homemade Whirlpool Bath Suitable for Arms and Legs. B. L. Boynton, Madison, Wis.—p. 279.
Thermal Effects of Short Wave Diathermy on Bone and Muscle. S. L. Osborne and J. S. Coulter, Chicago.—p. 281.
Electrolytic Action Between Metals in Bone Surgery. C. S. Venable, San Antonio, Texas.—p. 285.
Hyperpyrexia of Lymphopathia Venerea. E. B. Tauber and J. B. Squires, Cincinnati.—p. 289.
Roentgen Therapy in Acute Mastoiditis. R. Schillinger, Brooklyn.—p. 295.

Archives of Surgery, Chicago

36: 723-898 (May) 1938

Intra-Abdominal Apoplexy. C. B. Morton, University, Va.—p. 723.
*Acute Retrocecal Appendicitis Based on 751 Instances. D. C. Collins, Los Angeles.—p. 729.
Fresh Fracture of the Os Calcis. C. W. Goff, Hartford, Conn.—p. 744.
Collection of Air in the Right Subdiaphragmatic Space, with Special Reference to Hepatodiaphragmatic Interposition of the Colon. S. G. Schenck, Brooklyn.—p. 766.
*Mechanics of Simple Intestinal Obstruction: Experimental Study. L. Sperling, Minneapolis.—p. 778.
*Intestinal Obstruction: Experimental Evidence on Loss of Blood in Intestinal Strangulation. H. G. Scott, Minneapolis.—p. 816.
Osteogenic Sarcoma: Report of Two Unusual Cases. G. A. Carlucci, New York.—p. 838.
Dugas on Curability of Inflammation. Cecilia C. Mettler, Augusta, Ga.—p. 845.
Partial Cholecystectomy. W. L. Estes Jr., Bethlehem, Pa.—p. 849.
Fractures of Both Bones of the Leg: Management by Use of Double Steel Pin Traction in Plaster of Paris. G. J. Curry and E. S. Taylor, Flint, Mich.—p. 858.
Suppurative Intrathoracic Thyroiditis: Report of Case. J. D. Kirshbaum and A. H. Rosenblum, Chicago.—p. 867.
Polyostotic Fibrous Dysplasia. L. Lichtenstein, New York.—p. 874.

Acute Retrocecal Appendicitis.—During the last ten years, Collins has encountered 751 instances (25 per cent) of acute retrocecal appendicitis among 3,003 consecutive appendectomies. Four hundred and seventy-one of the patients were men. The average age of the 751 persons was 29.7 years. Three hundred and one mentioned previous frequent occurrence of infections of the upper part of the respiratory tract, and in 111 of these such infections had preceded their present acute abdominal complaints by an average interval of 8.4 days. Four hundred and sixty-six persons had had previous similar attacks of abdominal pain of varying degrees of severity. Three hundred and eight patients had been previously treated for cholecystitis, gastric or duodenal disease or for disease of either the right kidney or the right ureter. Fifty-two persons had been operated on for various types of peptic ulcer, without alleviation of their symptoms. Of the 280 women in the series, forty-four had received medical treatment for pelvic inflammatory disease without obtaining noticeable relief. At the time of the appendectomy, thirty-three showed no evidence of pelvic inflammatory disease. Two nephropexies had been performed without relieving the patients. Forty-five women had been subjected to various gynecologic procedures, without experiencing permanent relief. An additional thirty-one had had various major pelvic operations, at which, for various reasons, their appendixes had not been removed. Nausea, headache, flatulence, heartburn, regurgitation, insomnia, constipation and lack of appetite, of which many of these patients complained, disappeared in 73.4 per cent of the cases after appendectomies. In twelve persons more than 55 years of age, certain long-continued arthritic pains disappeared after the removal of the appendix. One hundred and thirty-seven patients complained of mild pains in the epigastric or the right hypochondriac region, which failed to become localized at McBurney's (McArthur's) point; 214 complained of steady, dull, deeply situated pains in the right lumbar region of the back; eighty-eight experienced pains in the right shoulder, and in 107 instances severe pains in the upper part of the abdomen continued for an average of 6.4 hours. Only 142

persons presented the fairly classic signs and symptoms of acute appendicitis and only two of this subgroup died of generalized peritonitis. The average oral temperature on admission was 100.4 F. Palpation presented a diffuse, mild, generalized tenderness in the right side of the abdomen located lateral and cephalad to McArthur's point. Hyperesthesia of the skin was rarely seen in the right lower quadrant of the abdomen. Muscular rigidity was absent in 397 instances. Rebound tenderness was absent in 243 cases. The sign most frequently obtained was the production of intense pain by exerting steady, deep pressure on the right flank lateral to the right psoas major muscle. Rectal examination in 218 instances gave the only positive signs of the existence of acute appendicitis. Correct preoperative diagnoses of acute appendicitis were made in only 554 cases, and only 304 were diagnosed as of the retrocecal variety. In seventy-seven patients walled-off retrocecal abscesses were palpated through exploratory midright rectus incisions. These were then closed without disturbing the abscesses and secondary muscle-splitting incisions were made directly over the abscesses and proper drainage was instituted. In the remaining 474 cases, in which either a midright rectus incision or a midline incision was employed, the appendix was removed usually through a lengthened incision with considerable difficulty. The average stay in the hospital for patients with an incision of this type was twenty-five days, as compared to sixteen days for those with a muscle-splitting incision. Localized abscesses were drained by the use of simple Penrose drains of soft rubber dam material. There were ninety-seven examples of secondarily formed pelvic abscesses that required drainage. Twelve of these patients died; ten deaths were attributable to nonmuscle-splitting incisions. Eleven instances of subdiaphragmatic abscesses were encountered and four of these patients died. There were eight patients with multiple abscesses of the liver, all of whom died. Of sixty-nine persons with postoperative pneumonia, nine died. Among the 113 instances of generalized peritonitis, there were twenty-five deaths. Only twelve of the fifty-eight deaths occurred in the cases in which muscle-splitting incisions were performed. Twenty-nine of the patients who died had taken one or more doses of laxative prior to hospitalization.

Intestinal Obstruction.—Sperling confines his study to increased intraenteric pressure as it occurs in simple ileal obstruction and the effects of such pressure on the structure, the function and the permeability of the intestinal wall. A detailed study is presented of the influence of simple mechanical ileus on the length, the weight, the water content, the blood content and the strength of the intestinal wall. Distention, with its increased intraenteric pressure, has a pernicious effect on the function of the intestine. It produces an alteration in normal physiology which is sufficient to explain many of the changes in cases of intestinal obstruction. With the onset of intestinal obstruction there is stasis of fluid and gas within the intestine. The stasis produces a slight increase of intraenteric pressure and a moderate degree of distention which stimulate the normal intestine to increased peristalsis. Distention and increased intraenteric pressure result in an augmented secretion of intestinal juices, which adds to the content of the intestine. Absorption is decreased early in the course of the obstruction. There is thus a progressive increase of distention and of intraenteric pressure. With a rise in intraenteric pressure there is eventually manifested interference with the circulation of blood to the wall of the intestine. Venous stasis ensues and causes infiltration of the intestinal layers with leukocytes. Eventually hemorrhagic infarction, necrosis and even perforation of the intestine may take place. If the intraenteric pressure is maintained over a sufficiently long time, the viability of the intestinal wall becomes impaired and its permeation by toxic material may take place through the gangrenous patches. Death is then due to peritonitis or to absorption of toxic material by way of the peritoneum.

Loss of Blood in Intestinal Strangulation.—From the results of 240 experimental strangulation obstructions Scott concludes that: 1. There is little or no evidence for the direct absorption of "toxic products" from strangulated loops of intestine. 2. There is little evidence for the transperitoneal absorption of "toxic products," except late in the course of strangulation obstruction, when the intestinal wall is no longer viable. 3. Whole blood and plasma are apparently lost from the general circulation in quantities sufficient in themselves to account for the symptoms of shock and death which occur in most cases of strangulation obstruction.

Canadian Public Health Journal, Toronto

29: 153-202 (April) 1938

The Place of Mental Hygiene in Public Health. B. T. McGhie, Toronto.—p. 153.
Muscle Conservation and Reeducation in Postpoliomyelitis Paralysis. G. A. Ramsay and R. A. Johnston, London, Ont.—p. 158.
Survey of Tuberculosis Patients in the Home, Vancouver, B. C., 1936. W. Morris, Vancouver, B. C.—p. 166.
Vital Statistics in the Public Health Program. D. V. Currey, St. Catharines, Ont.—p. 171.
*Trichinosis in Montreal. J. H. Gervais, Montreal.—p. 176.
Recent Health Legislation in Canada. R. D. Defries, Toronto.—p. 180.

Trichinosis in Montreal.—Gervais states that twice during 1935, in January and in November, the city health department was notified of the occurrence of cases of trichinosis in Montreal. In the first outbreak there were six cases and one death and in the second sixty-eight cases and no deaths. In neither epidemic was the source of the infestation found. The two outbreaks were unrelated. The second outbreak was limited to a group of people of German extraction who used various types of sausages which contained uncooked pork. Since many persons were known to have used the meat products from this establishment, the fact that only sixty-eight suffered from trichinosis indicates that only a small amount of trichina-infected pork had probably been used.

Delaware State Medical Journal, Wilmington

10: 69-120 (May) 1938

Mature Approach to Child Training. M. A. Tarumianz, Farnhurst.—p. 69.
Studies of Cases of General Paresis in Delaware State Hospital. Persis F. Elfeld, Farnhurst.—p. 73.
Suicide. J. W. Ballard, Farnhurst.—p. 74.
Multiple Influences in the Field of Mental Hygiene: Clinical Studies of Personal and Social Maladjustments, with Emphasis on Multiplicity of Determining Factors. C. Uhler, Farnhurst.—p. 78.
Characteristic Features of Insulin Coma. G. J. Gordon, Farnhurst.—p. 87.
Clinical Study of a Child with Problems. Fredericka F. Freytag, Farnhurst.—p. 91.
Concerning Sedatives. A. L. Crane, Farnhurst.—p. 94.
Homicidal Insane. M. Zimbler, Farnhurst.—p. 98.
The Practice of Dentistry in a Mental Hospital. W. H. Norris and W. H. Mason, Farnhurst.—p. 105.

Florida Medical Association Journal, Jacksonville

24: 571-622 (May) 1938

Preoperative and Postoperative Care in Surgical Treatment of Pulmonary Tuberculosis. K. A. Morris, Jacksonville.—p. 583.
Bone Injuries in General Practice. E. L. Jewett, Orlando.—p. 584.
*Use of Chaulmoogra Oil in Treatment of Chronic Arthritis. D. W. Smith, Miami; T. G. Blocker and H. J. Tumen, Philadelphia.—p. 586.

Chaulmoogra Oil in Chronic Arthritis.—Smith and his associates believe that chaulmoogra oil (90 per cent chaulmoogra oil, 10 per cent olive oil and 0.2 per cent ethyl aminobenzoate) does give definite relief in chronic arthritis. Treatment of sixty-five patients was limited to the use of chaulmoogra oil. Foci of infection were not removed and no diet was prescribed. Treatment with chaulmoogra oil was postponed in the case of patients recently treated by other methods in order that results might be more definitely evaluated. In a few patients chaulmoogra oil was administered orally, either alone or in combination with the intramuscular treatment. The injections were given in the buttock, about 1½ to 2 inches below the crest of the ilium and above the border of the gluteus maximus. In this area a 3 or 4 inch needle is plunged, allowed to touch the ilium and then withdrawn one-fourth inch prior to the injection in order to avoid the subcutaneous tissues. The planned course of treatment consisted of eight intramuscular injections of chaulmoogra oil (5 cc. each) within six weeks; the first four biweekly and the others at weekly intervals. Of fifteen cases of atrophic arthritis, thirteen became symptom free. The two patients who were not rendered symptom free showed evidence of rheumatic heart disease. Eleven patients showed definite subjective improvement after the third injection. Objective joint changes were definite but more gradual. Eighteen of the thirty-three patients with mixed arthritis became symptom free and

fourteen showed moderate to marked improvement. The improvement corresponded roughly to the degree of atrophic or infectious involvement. In the seventeen patients having hypertrophic arthritis the results were entirely unsatisfactory. Eleven failed to improve at all. Five showed slight and one moderate improvement. Of the six patients who improved nearly all had a subsequent recurrence of symptoms. No objective changes were noted in any of the hypertrophic joints following treatment.

Indiana State Medical Assn. Journal, Indianapolis

31: 275-326 (June) 1938

The Crippled Child. A. F. Knoefel, Terre Haute.—p. 275.
The Palsied Child: A Preventive Program. C. F. Thompson, Indianapolis.—p. 278.
Treatment of Ragweed Pollenosis: Comparison of Oral and Hypodermic Medication. C. B. Bohner, Indianapolis.—p. 279.
Review of Syphilis. A. C. Offutt, J. C. Kennedy, C. W. Morris, H. N. McClelland and J. F. Spahr, Indianapolis.—p. 283.
Sulfanilamide and Its Related Compounds. W. L. Green, Columbus.—p. 294.
Infectious Mononucleosis. L. L. Blum, Terre Haute.—p. 296.
Ultraviolet Light and Certain Diseases of the Skin. S. R. Mercer, Fort Wayne.—p. 300.

Journal of Allergy, St. Louis

9: 321-432 (May) 1938

*Statistical Evaluation of Leukopenic Index in Allergy. Mary Loveless, R. Dorfman and Lillian Downing, New York.—p. 321.
Leukopenic Index. E. A. Brown, London, England, and G. P. Wadsworth, Boston.—p. 345.
Variations in Leukocyte Count in Relation to Leukopenic Index. J. M. Hill and Eugenia B. Nethery, Dallas, Texas.—p. 371.

Leukopenic Index in Allergy.—Loveless and her associates state that experiments with the leukopenic index test on a group of nonsensitive subjects failed to support the contention that leukocytosis is the normal response to ingestion, since neither the level nor the fluctuation of the total leukocyte count during a seventy-minute postprandial period was significantly changed from the corresponding fasting period. A standard deviation of ± 511 leukocytes (equal to ± 7.3 per cent of 7,000 cells, the approximate average of all the counts) was found in six successive total leukocyte counts obtained on each of nineteen nonsensitive subjects. A fluctuation of 1,318 cells or more up or down from the mean total count would be expected to occur in analogous individuals, therefore, under the conditions of the test only once in a hundred trials by chance alone. About the same small proportion of normal subjects showed this degree of leukopenia after ingestion as did the food-sensitive patients after either compatible or incompatible food was ingested. In short, postprandial leukopenia was not found to be an index to incompatibility in the experiments. The development of asthma, hay fever and urticaria in a small group of ragweed-sensitive patients given ragweed extract subcutaneously was not associated with any significant change or fluctuation in the leukocyte level.

Journal of Immunology, Baltimore

34: 357-428 (May) 1938

Studies on Haemophilus Influenzae: III. Failure of Complement of Some Animal Species, Notably Guinea Pig, to Activate Bactericidal Function of Serums of Certain Other Species. J. H. Dingle, L. D. Fothergill and Caroline A. Chandler, Boston.—p. 357.
Action of Diphtheric Toxin on Embryonic Chicks: I. Action of Toxin. Florence L. Evans, Carville, La.—p. 393.
Group Specific Agglutinins in Rabbit Serums for Human Cells: III. Cold Agglutinins. K. M. Wheeler, Providence, R. I.—p. 409.

Journal Industrial Hygiene & Toxicology, Baltimore

20: 333-388 (May) 1938

*Chronic Lung Changes in Electric Arc Welders. N. Enzer and O. A. Sander, Milwaukee.—p. 333.
Isolation of Mineral Dust in Lungs and Sputum. N. Sundius and A. Bygdén, Stockholm, Sweden.—p. 351.
Comparison of Toxicity of Carbon Tetrachloride and Trichlorethylene. H. M. Barrett, D. L. MacLean and J. G. Cunningham, Toronto, Canada.—p. 360.
*Health Hazards in Metal Spraying. H. I. Miller Jr., G. M. Hama, E. C. J. Urban and P. Drinker, Boston.—p. 380.

Lung Changes in Electric Arc Welders.—For the last three years Enzer and Sander have had under observation twenty-six electric welders of low carbon steel with rods of the same composition. In five of these, nodular shadows were seen on the roentgenograms of their chests which simulated a modified type of silicosis. In five others the trunk shadows were markedly exaggerated, the appearance simulating a prenodular fibrosis of the type seen in older foundry welders. The past occupational histories were checked in detail for exposure to silica dust, but the majority had welded in this plant since they began work, an average total of nineteen years. These men were not breathing particulate matter to any appreciable degree other than that in the welding fume itself. Several of the sixteen men in whom there was no x-ray appearance of nodulation had worked as welders in this plant even longer than those who showed definite nodulation. Investigation revealed that each of the five men with nodulation had done more work inside of tanks than had the five showing only exaggerated trunk shadows but that the latter five had welded inside the tanks considerably more than had any of the sixteen men with perfectly clear lungs. Deposition of iron oxide in the lungs was responsible for the x-ray appearance of nodulation. Functional impairment of the lungs with such iron deposits appears to be lacking, both as to the development of clinical symptoms or susceptibility to complicating infections.

Health Hazards in Metal Spraying.—Miller and his colleagues studied the modern metal-spraying process under laboratory conditions which simulated industrial operations. No matter how careful or skilled the operator, it was found that some of the sprayed metal missed its mark and polluted the surrounding air. Lead, zinc, iron, brass, bronze, copper and aluminum wire were sprayed and the curves plotted show the rates at which the suspensions of the metals settled out of still air. The high muzzle velocity of the sprayed metal makes ventilation requirements for exhaust hoods unusually severe. It was found difficult to spray ordinary small objects, even when placed well back in the hood, without spray being blown back into the face of the operator. Freedom from the general pollution of the workshop was easily obtained when the spraying was done in a large booth or room which was well ventilated. Spray-gun operators should wear air-supplied respirators.

Journal of Urology, Baltimore

39: 589-732 (May) 1938

Renocolic Fistulas: Reports of Three Cases. M. B. Wesson, San Francisco.—p. 589.
Roentgenologic Examination of Kidney, with Special Reference to Backflow and Injuries Associated with Retrograde Pyelography. W. E. Stevens, San Francisco.—p. 598.
Hypertension in Unilateral Renal Disease. W. F. Leadbetter and C. E. Burkland, Baltimore.—p. 611.
*Nephrectomy for Arterial Hypertension: Preliminary Report. C. H. Boyd and L. G. Lewis, Baltimore.—p. 627.
Litholapaxy. G. J. Thompson, Rochester, Minn.—p. 636.
Complete Vesical Paralysis: Report of Case. A. de la Pena, A. Amselem and R. Ruiz-Ocana, Madrid, Spain.—p. 642.
Presacral Neurectomy and Sacral Ganglionectomy in Affections of Bladder. F. L. Pearl and B. Strauss, San Francisco.—p. 645.
Retrograde Catheterization in Diagnosis and Treatment of Seminal Vesiculitis. A. P. Peterson, New York.—p. 662.
Unusual Type of Diverticulum of Urethra. A. de la Pena, Madrid, Spain, and J. A. Hendrick Jr., Rochester, Minn.—p. 678.
Lesions of Urinary Tract Producing Symptoms of Intra-Abdominal Disease. R. Chute and S. B. Kelley, Boston.—p. 683.
Chemotherapy in Infections of Urinary Tract. E. N. Cook, Rochester, Minn.—p. 692.
Gluconic Acid as Urinary Acidifying Agent. I. R. Sisk and O. Toenhart, Madison, Wis.—p. 699.
Further Clinical and Laboratory Observations of Mandelic Acid. G. Carroll, B. Lewis and L. Kappel, St. Louis.—p. 710.
Human Prostatic Infection with Brucella Abortus (Alcaligenes Abortus). M. L. Boyd, Atlanta, Ga.—p. 717.
Schistosomiasis Japonicum with Vesical Involvement Thirty-Seven Years After Infection. W. G. Hayward, Jamestown, N. Y.—p. 722.
Infections of Urinary Tract Due to Shigella Alkalescens. E. Neter, Buffalo.—p. 727.
Mechanical Aid in Transurethral Prostatic Resections. B. E. Fillis, Hubbard Woods, Ill.—p. 731.

Nephrectomy for Hypertension.—Boyd and Lewis cite a case in which the true condition (arterial hypertension) was brought to light only after bilateral simultaneous exposure of the adrenals and kidneys followed by nephrectomy. The patient was relieved of his symptoms and his blood pressure returned to normal. The preoperative clinical studies placed the case in the category of malignant hypertension. If an infarct had not occurred nephrectomy probably would not have been done. The clinical result, to date, justifies the procedure. Experimental work on the subject of hypertension by Goldblatt seems to strengthen this view.

New England Journal of Medicine, Boston

218: 827-866 (May 19) 1938

Some Newer Aspects of the Alcohol Problem. T. Leary, Boston.—p. 827.
Nephritic Toxemias of Late Pregnancy: Clinical Study. L. E. Phaneuf and M. O. Belson, Boston.—p. 834.

218: 867-904 (May 26) 1938

The Growth of the Boston City Hospital from 1864 to the Present. M. Moore, Boston.—p. 867.
Ascorbic Acid Requirements in Early Infancy. T. H. Ingalls, Boston.—p. 872.
*Effect of Sulfanilamide on Rheumatic Fever and Chorea. B. F. Massell and T. D. Jones, Boston.—p. 876.
Early Diagnosis of Cancer of the Cervix Uteri. W. Schiller, Chicago.—p. 878.
Disturbances of Bladder Function in Pernicious Anemia. C. J. E. Kickham and W. C. Moloney, Boston.—p. 880.
Foreign Bodies in Male Urethra: Report of Unusual Case. A. Riley, Boston.—p. 884.

Effect of Sulfanilamide on Rheumatic Fever and Chorea.—Massell and Jones used sulfanilamide in the treatment of fifty-eight patients with rheumatic fever and seven patients with chorea. Sulfanilamide was administered in divided doses with a total daily dose of approximately from 6 to 7 grains (0.4 or 0.45 Gm.) per 10 pounds (4.5 Kg.) of body weight during the first twenty-four hours, and thereafter from 4 to 5 grains (0.26 to 0.32 Gm.). The duration of therapy varied from a few days to as long as two months. Of the fifty-eight patients given sulfanilamide, rash and fever developed in thirty-one. In no case did sulfanilamide produce any symptomatic relief or shorten the course of rheumatic fever. Likewise sulfanilamide therapy had no effect on the natural course of the chorea in any of the seven patients.

Oklahoma State Medical Assn. Journal, McAlester

31: 153-184 (May) 1938

Shock. S. E. Kernodle, Oklahoma City.—p. 155.
Constipation. M. F. Jacobs, Oklahoma City.—p. 157.
Roentgen Therapy. L. S. McAlister, Muskogee.—p. 161.
Epidemic Encephalitis, St. Louis Type: Survey of the Outbreak, Summer and Fall of 1937. G. S. Bozalis and A. B. Jones, St. Louis.—p. 164.

Radiology, Syracuse, N. Y.

30: 537-666 (May) 1938

Production of X-Rays of Very Short Wavelength. W. D. Coolidge, Schenectady, N. Y.—p. 537.
*Calcification and Ossification of Kidney: Review of Literature and Report of Cases. A. E. Goldstein and B. S. Abeshouse, Baltimore.—p. 544.
Roentgenologic Study of Pineal Orientation: II. Comparison of Graphic and Proportional Methods in Proved Cases of Brain Tumor. W. W. Fray, Rochester, N. Y.—p. 579.
Study of Tissue Dosage and Radiation Effect in Cases of Operable Cancer of the Breast Treated by Combination of Preoperative Irradiation and Radical Mastectomy. F. E. Adair, E. L. Frazell and Edith H. Quimby, New York.—p. 588.
Practical Aspects of Calcification and Ossification in Various Body Tissues. B. P. Widmann, H. W. Ostrum and H. Freed, Philadelphia.—p. 598.
Roentgen Therapy of Dupuytren's Contracture. S. R. Beatty, Madison, Wis.—p. 610.
Calculation of Percentage Depth Doses. C. Packard, New York.—p. 613.
Importance of Statement of Tumor Dose in Radiotherapy. J. R. Nuttall, Manchester, England.—p. 622.
Focalograph: New Method for Examining the Target of a Roentgen-Ray Tube. E. K. Reid and L. F. Black, Washington, D. C.—p. 625.
Back Scatter and Its Effect on Dosage Measurements. R. S. Landauer, Highland Park, Ill.—p. 629.
Some Factors Influencing Distribution of Radiation Using a Two-Oblique-Field Technic. M. C. Reinhard and F. Miers, Buffalo.—p. 633.
Application of Roentgen Ray in Diagnosis of Conditions of Thymus Gland in Children. H. A. Judson, Los Angeles.—p. 636.

Calcification and Ossification of the Kidney.—Goldstein and Abeshouse state that in the human body calcification occurs either as a physiologic or pathologic process. Physiologic calcification is the normal process concerned with the deposition of calcium salts in the development and the formation of bone. Pathologic calcification includes the deposition or precipitation of calcium salts in those tissues or organs which ordinarily do not contain calcium deposits or concrements. For practical purposes they classify pathologic calcification into metastatic and nonmetastatic. In metastatic calcification the deposition of calcium salts presumably takes place in normal or uninjured tissues, whereas the nonmetastatic type of calcification occurs in tissues or organs which are the site of localized changes predisposing to the deposition of the calcium salts. Nonmetastatic calcification may be further divided into dystrophic calcification, calcinosis, arterial calcification, stone formation and heterotopic ossification. The latter groups are briefly discussed only so far as they concern calcification of the kidney. Dystrophic calcification is the most common type of pathologic calcification encountered. Any dead or damaged tissue, infected or uninfected, so large or so situated that it cannot be absorbed, may become infiltrated with calcium salts. The location and distribution of these calcified lesions are extremely varied since every tissue and organ in the body is subject to retrogressive changes or lesions which predispose to the deposition of calcium salts. While this type of calcification is directly dependent on local retrogressive changes (fatty infiltration, hyalinization, necrosis and the like) which are the result of circulatory, toxic inflammatory or nutritional disturbances, the degree or extent of the calcification may be modified by general changes in calcium metabolism or in the amount of calcium in the blood or tissue fluids. The exact physicochemical changes involved in the deposition of calcium in the various types of pathologic calcification remain a matter of conjecture and controversy. The extremely variable degree of calcification observed in experimental and clinical conditions with hypercalcemia emphasized the difficulty of attempting to establish a predictable relationship between the degree of hypercalcemia and the deposit of calcium in the tissues. Any considerable increase in the concentration of serum phosphatase may disturb the equilibrium of calcium and cause a precipitation of calcium salts. Renal pathologic calcification is discussed and classified into three distinct types: 1. Metastatic calcification of the kidney (Kalkmetastasen) which occurs in those various bone diseases accompanied by a hypercalcemia. 2. Nonmetastatic calcification associated with a renal lesion which causes a decreased solubility of the calcium salts of the blood and tissue fluids or results in the faulty or impaired excretion of calcium salts from the kidney—the so-called Kalkgicht of Schmidt. 3. Nonmetastatic (dystrophic) calcification associated with a renal lesion in which the precipitation of calcium salts occurs in tissues presenting degenerative, vascular or retrogressive changes. In type 1, the essential factor is an increase in the calcium salts of the blood which is due to the absorption of these salts from the bone lesions. The majority of these cases develop in the absence of a renal lesion. In type 2, the important factor is a renal lesion which may be primary or secondary. Hypercalcemia is not essential to this type of calcification although the degree of renal calcification is more marked in those cases accompanied by a transitory or permanent increase in the blood calcium. In type 3, the essential factor is also a renal lesion which may be of an infectious, obstructive, traumatic or neoplastic character. Hypercalcemia does not play a primary part in this type of calcification.

Tennessee State Medical Assn. Journal, Nashville

31: 165-208 (May) 1938

President's Address: Surgery of the Civil War. G. C. Williamson, Columbia.—p. 165.
Treatment of Recent Fractures of Neck of Femur by Moore Nails. H. E. Conwell and J. D. Sherrill, Birmingham, Ala.—p. 172.
Modern X-Ray Therapy. A. W. Erskine, Cedar Rapids, Iowa.—p. 175.
Behavior Disorders in Children. J. W. Bruce, Louisville, Ky.—p. 183.
Clinical Experiences with Acetyl-Beta-Methylcholine Chloride in Treatment of Functional Dysmenorrhea. J. C. Burch and Doris Phelps, Nashville.—p. 187.
The Newborn in the Hospital. J. Zahorsky, St. Louis.—p. 189.
Sphenopalatine Ganglion Neuralgia. C. K. Lewis, Memphis.—p. 193.

West Virginia Medical Journal, Charleston

34: 241-288 (June) 1938

Maternal Mortality. L. H. Douglass, Baltimore.—p. 241.
The Autopsy Situation in West Virginia. B. S. Brake, Clarksburg.—p. 248.
Treatment of Benign Uterine Hemorrhage by Irradiation. V. L. Peterson, Charleston.—p. 252.
Influenzal Meningitis Successfully Treated with Sulfanilamide. T. G. Folsom and K. E. Gerchow, Huntington.—p. 254.
Contact Ulcer of the Larynx. W. C. Thomas, Huntington.—p. 256.
School Program Planning. B. H. Pollock, Point Pleasant.—p. 260.
Tuberculin Tests at West Virginia University. F. R. Whittlesey, Morgantown.—p. 265.
Varicose Ulcer of the Leg. H. Jones, Circleville, Ohio.—p. 267.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

50: 221-266 (May) 1938

Studies in Nail Growth. W. E. Le Gros Clark and L. H. D. Buxton.—p. 221.
*Pemphigus: Review of Seven Cases. J. Kinnear.—p. 236.

Pemphigus.—Kinnear reports seven cases of pemphigus: two in children, both of whom recovered; one case of pemphigus vulgaris and one case of pemphigus foliaceus, both of which were fatal; two cases of acute pemphigus ushered in by erythema multiforme in young girls, one of whom died and one recovered, and one in a patient presenting symptoms of dermatitis herpetiformis who recovered. The author's experience with a complex carbamide compound of trisulfonic acid (germanin) coincides with that generally recorded. Its action may be dramatic, satisfactory, useless or apparently dangerous. Its use may be followed by high temperature, renal symptoms and/or cutaneous eruptions; e. g., late erythema. However, it does deserve a trial. P-benzylaminobenzenesulfonamide was used in one case apparently with some benefit. Although the author treated only two patients locally the results make it evident to him that tannic acid and acriflavine jelly, as used for burns, are the treatment of choice for pemphigus since all the advantages of this treatment as used in burns were duplicated.

British Medical Journal, London

1: 935-988 (April 30) 1938

Nasal Sinusitis in Childhood. J. Crooks.—p. 935.
*Clinical Experiment in Estrin Therapy. P. M. F. Bishop.—p. 939.
Leukopenia in Pneumococcic Peritonitis Treated by Sodium Pentose Nucleotide. J. B. G. Muir.—p. 942.
Eclampsia: Statistical Review. G. G. Lennon.—p. 944.
Spontaneous Hematomyelia. J. M. Holmes.—p. 946.

Estrogen Therapy.—Estrogen is now well established as a therapeutic agent, but many problems remain to be solved before the most effective mode of administration can be determined. Bishop describes the effect of estrogen on a castrated woman (ovariectomy for cysts). Administration of estrogen in quite small doses by mouth was effective in controlling symptoms of hot flashes. The level of theelin threshold bleeding was found to be between 6,000 and 5,000 international units by injection and between 25,000 and 30,000 international units by mouth, suggesting a peroral/intramuscular ratio of 5:1. A 14 mg. tablet of crystalline theelin was implanted subcutaneously and was effective in controlling symptoms for four or five weeks.

Clinical Science, London

3: 91-246 (April 28) 1938

*Insulin Resistance and Arteriovenous Blood Sugar Difference. W. J. Griffiths.—p. 91.
Effect of Different Diets on Insulin Sensitivity of Diabetics. W. I. Card.—p. 105.
*Blood Circulation in the Human Limb: Observations on Differences Between Proximal and Distal Parts and Remarks on Regulation of Body Temperature. R. T. Grant and R. S. B. Pearson.—p. 119.
Effects of Asphyxia and Pressure on Sensory Nerves of Man. T. Lewis and E. E. Pochin.—p. 141.
Observations on Blood Circulation in Voluntary Muscle in Man. R. T. Grant.—p. 157.
*Observations on Referred Pain Arising from Muscle. J. H. Kellgren.—p. 175.
Delay of Pain Perception in Tabes Dorsalis. E. E. Pochin.—p. 191.
Unilateral Retraction of Upper Lid in Graves' Disease. E. E. Pochin.—p. 197.
Some Observations on Renin, a Pressor Substance Contained in Normal Kidney, Together with a Method for Its Biologic Assay. G. W. Pickering and M. Prinzmetal.—p. 211.
Further Observations on Familial Periodic Paralysis. E. N. Allott and B. McArdle.—p. 229.
Effect of Adrenalin on Serum Potassium Level in Man. L. I. M. Castleden.—p. 241.

Insulin Resistance and Arteriovenous Blood Sugar.—Griffiths studied the effect of an intravenous injection of insulin on the rise in arterial blood sugar following the ingestion of dextrose in a number of normal and diabetic subjects. Some diabetic patients are sensitive to insulin, which either diminishes or abolishes the rise in arterial blood sugar as in the normal subject; others exhibit considerable resistance to the hormone so that the arterial hyperglycemia is little affected. A study of the arteriovenous blood sugar difference revealed that in spite of the disparity in the effects of insulin on the arterial blood sugar in these patients there is no corresponding difference in the peripheral action of the hormone, which in both types is less than it is in the normal subject. For this reason it is concluded that although in all diabetic patients there is an enfeeblement of the peripheral action of insulin, resistance to insulin as determined by the insulin-dextrose test is mainly due to the inability of the hormone to exert its entire control over the storage of sugar in the liver. The frequent occurrence of negative arteriovenous differences (venous sugar exceeding arterial) in the diabetic patient and their rarity in the normal subject is discussed. As yet no completely satisfactory explanation of these negative differences is possible. It appears that the insulin-sensitive diabetic person is suffering from a lack of insulin and that the symptoms of the insulin-resistant patient are, at least in part, due to the activity of some factor which opposes the action of insulin on the storage of sugar in the liver. The possible relation between the relative inability of insulin to control hepatic glycogenolysis in the resistant patient and pituitary dysfunction are discussed.

Blood Circulation in the Human Limb.—Grant and Pearson show that differences exist between the circulation in the human extremities, apart from that of the hands and feet, and the circulation in the more proximal parts. In measuring change of cutaneous temperature and blood flow of the proximal parts precautions are required to exclude the effect of venous blood returning up the limb from the extremities. While in the extremities sensory stimuli applied to the body cause vasoconstriction, they have either no effect or cause vasodilatation in the forearm and leg. Small doses of epinephrine regularly cause an increase of the volume of the limb and an increased flow of blood in the forearm and leg due to vasodilatation in the voluntary muscles. The vasodilator reaction to epinephrine is increased after sympathectomy. In man, as in other animals, circulating epinephrine is not the factor responsible for the return of vascular tone following sympathectomy. The vascular changes in the distal and proximal parts of the limb are described in response to alterations of body temperature. Increased blood flow through active voluntary muscle exerts a conspicuous effect (by the conduction of heat) on the temperature of the overlying skin. Warming the body and muscular activity have a bearing on the maintenance of body temperature, both local and general. The arteriovenous anastomoses of the extremities play a greater part than was heretofore realized in maintaining the temperature of the limbs and in regulating body temperature.

Referred Pain Arising from Muscle.—Using the injection method Kellgren investigated the character and extent of the muscular pain provoked when solutions of sodium chloride were injected into muscles, tendons and the periosteum. He found that fascia and tendon sheath give sharply localized pain, while muscles give diffuse pain which is referred. The diffuse pain from a given muscle is always distributed within certain regions, though the distribution within these limits varies from person to person and according to the part of the muscle stimulated. Pain arising from the muscles may be confused with pain arising from other deep structures such as the joints and the testis. The distribution of the diffuse pain from muscles appears to follow a spinal segmental pattern. This pattern differs from that of the segmental innervation of the skin. Referred pain from muscles is associated with referred tenderness of the deep structures. It is suggested that the impulses responsible for pain from muscles and the other deep structures may follow a final common path in the central nervous system. Diffused pain might be explained by the pain fibers from muscles having diffuse instead of accurate central synaptic connections.

J. Royal Inst. Public Health and Hygiene, London

1: 439-498 (May) 1938

Treatment of Tuberculosis of Joints. J. G. Johnstone.—p. 453.
Air Conditioning in Relation to Public Health and to Diseases of Respiratory Tract. H. Roche.—p. 473.
Public Health Aspects of Personal Hygiene. V. Borland.—p. 477.
Artistic Pursuits and the National Fitness Campaign. Agnes Savill.—p. 485.

Lancet, London

1: 977-1032 (April 30) 1938

Malignant Hypertension. A. Ellis.—p. 977.
*Some Deficiencies of Nutrition and Their Relation to Disease: III. Nutrition and Nervous System, with Special Reference to Polyneuritis and Subacute Combined Degeneration of Cord. C. C. Ungley. —p. 981.
Treatment of Meningococcic Meningitis with Sulfanilamide. T. Crawford and G. B. Fleming.—p. 987.
*Action of Testosterone Propionate on the Female: Clinical Applications and Dosage. G. L. Foss.—p. 992.
Unusual Case of Lead Poisoning. J. N. M. Chalmers and S. L. Tompsett.—p. 994.
*Prevention of Complications During Gold Therapy in Tuberculosis and Arthritis. K. Secher.—p. 996.

Nutrition and Disease of Nervous System. — Ungley presents evidence which justifies the belief that polyneuritis associated with alcoholism, pregnancy and gastrointestinal lesions is due, in some cases at least, to nutritional deficiency. Etiologic factors are low intake, poor assimilation and increased utilization of vitamin B_1. According to Strauss (1936), the neurologic manifestations do not differ from beriberi either clinically or pathologically. The cases described were characterized by sensory as well as by motor involvement, a fairly symmetric distribution affecting most of the distal parts of the extremities, with little or no increase of protein in the cerebrospinal fluid. There were mental symptoms in some instances. Low values for vitamin B_1 have been found in the blood in alcoholic polyneuritis and polyneuritis secondary to pyloric stenosis and a moderate value in polyneuritis of pregnancy undergoing spontaneous recovery. The excretion of vitamin B_1 in the urine was low in all cases and the response to test doses was slight or delayed. A response to vitamin B_1 therapy after a control period without improvement was observed in some cases, but the effects were not dramatic. Improvement was slow, owing perhaps to the time required for regeneration in severely damaged neurons. The possible role of deficiency of other food factors, particularly vitamin A, needs further consideration. Vitamin B_1 appeared to be without influence on other forms of polyneuritis. It is probable that subacute combined degeneration of the cord, like pernicious anemia, is the result of a nutritional deficiency based on a gastric defect. At present there is no conclusive evidence that any substance lacking the characteristic effect of liver on hemopoiesis in pernicious anemia can arrest the progress or influence the course of subacute combined degeneration of the cord. Most cases of subacute combined degeneration of the cord could be prevented by early recognition, accurate diagnosis and efficient treatment of pernicious anemia. With adequate liver treatment, preferably parenteral, the nervous lesions can be arrested. No case of subacute combined degeneration of the cord, however severe, should be abandoned without recourse to intensive parenteral liver therapy.

Action of Testosterone Propionate in Women. — The outcome of animal experiments with testosterone propionate has led to its use as a remedy for excessive and irregular uterine bleeding due to hyperfolliculinemia in women, especially as Zuckerman's work was fairly conclusive that it caused no undesirable secondary effects, except perhaps enlargement of the clitoris. Foss used testosterone propionate in sixteen cases and found that for most patients total doses of from 300 to 800 mg. are required, according to the severity and duration of bleeding and the nature of the disorder to inhibit endometrial proliferation. In some cases of menorrhagia cyclic doses of from 20 to 40 mg. given twice a week for a few months are sufficient to counteract follicular overaction or to restore a cyclic rhythm in metrorrhagia. In severe cases a total dose is required of from 800 to 2,000 mg. given in daily injections of 100 mg. or injections given twice a week of from 150 to 200 mg., the individual dosage being adjusted to the clinical history. Metrorrhagia and menorrhagia can as a rule be controlled by injection of testosterone propionate in adequate doses. Two patients have proved refractory to treatment, even with large doses of testosterone propionate. No harmful effect, however, has been noticed in the sixteen patients.

Complications During Gold Therapy. — According to Secher, the reactions provoked by double sodium gold thiosulfate therapy in tuberculosis and arthritis are attributed to liberation of toxins from tuberculous or rheumatic lesions. They may be prevented or checked by giving large doses of vitamins A, B and C before and during treatment.

Medical Journal of Australia, Sydney

1: 721-760 (April 23) 1938

Public Health Legislation: Its Evolution in South Australia. A. R. Southwood.—p. 726.
Concoction of Spirits from the Time of Galen Onward. E. F. Gartrell. —p. 730.
Indications for Blood Transfusion. I. J. Wood.—p. 731.
Observations on Morbidity in Tropical and Subtropical Queensland. A. H. Baldwin.—p. 733.
Indications for Interference During Labor. A. M. Wilson.—p. 738.

Tubercle, London

19: 337-384 (May) 1938

*The Modern Outlook on Tuberculin. H. J. Parish.—p. 337.
Etiology of Bronchiectasis: Its Experimental Production and Clinical Study. W. E. Adams and L. Escudero.—p. 351.
Desensitization in Treatment of Tuberculous Guinea Pigs. J. D. Thayer. —p. 365.

Tuberculin.—Parish discusses the preparation and purification of tuberculin, the stability of dilutions of tuberculin, the reactions in the laboratory following inhalation of tuberculin, the standardization of tuberculin and tuberculin in diagnosis, treatment, prophylaxis and veterinary practice. The term tuberculin as he uses it includes all preparations which have a specific irritant effect on the sensitized cells of man or animals infected with tuberculosis. The specific active principle, called purified protein derivative, is of protein nature and is the best reagent so far produced for diagnostic tests in man. Its preparation and obvious advantages over old tuberculin are discussed. The possibility of acute general tuberculin reactions of varying severity among laboratory workers has frequently been recognized. The symptoms arise from the inhalation of either dry preparations or of minute particles of liquid tuberculin dispersed by centrifugation, bubbling when tuberculin is being "stewed down" or other manipulation. Headache, dyspnea, a tight feeling across the chest, perspiration and slight pyrexia have been observed, entailing absence from work for two or three days. Lassitude persisted for a week or longer. In the past, it is possible that the association with tuberculin may have been unrecognized by some bacteriologists, who may have diagnosed the symptoms as influenza or asthma. The Mantoux test should replace all others in the diagnosis of tuberculous infection, for it permits accurate and graduated dosage. In connection with these tests, the extraordinary property possessed by tuberculin of adhering to glassware must not be overlooked. Tuberculin plays an increasingly important part in the diagnosis and prognosis of tuberculosis in man and is also invaluable in epidemiologic studies. Treatment with tuberculin, which is little used at present, might possibly be resumed under carefully controlled conditions. In veterinary practice, the intradermal test with potent tuberculin is highly specific in cattle and is a reliable indication of the presence of infection. It is being used increasingly to build up tuberculosis-free herds in England. While no claims have been made in recent years for the protective value of old tuberculin, prominence has been given to two suspensions of tubercle bacilli; namely, BCG and Spahlinger vaccine. The activity of these preparations probably does not depend on their tuberculin content. The role of BCG vaccine in the prevention of tuberculosis has not yet been fully established. Any immunity induced by the method appears to be incomplete and of short duration. It is believed by many workers that BCG is a more efficient antigen than dead tubercle bacilli, although the latter will produce tuberculin allergy and confer sufficient protection on guinea pigs to justify further clinical trial. The object in using Spahlinger vaccine is to reproduce natural conditions of growth. No heat or chemical is used to kill the bacilli, which are allowed to die naturally in one year or more (Spahlinger, 1932). Full details of the method of preparation have not yet been divulged. While the results indicate that the vaccine may have some protective effect, further investigations are required in the laboratory and elsewhere.

Annales de Médecine, Paris

43: 333-452 (May) 1938. Partial Index

Common Icterus, Its Infectious Nature. J. Troisier.—p. 338.
*Intolerance and Catarrhal Icterus. J. Caroli.—p. 344.
Acute Benign Hepatonephritis. J. Vague.—p. 360.
Metabolism of Sodium in Course of Common Icterus. M. Brulé, R. Sassier and J. Cottet.—p. 380.
Treatment of Benign Icterus by Duodenal Tubage. P. Harvier.—p. 389.
Treatment of Catarrhal Icterus by Cholagogues. E. Chabrol.—p. 398.

Intolerance and Catarrhal Icterus.—Caroli points out that intoxication, often of alimentary origin, is the cause of a number of cases of benign icterogenic hepatitis. He reviews a case the anaphylactic origin of which appears certain, since it developed in connection with a serotherapeutic accident. An injection of antitetanus serum was followed by severe headaches. From the twelfth day on, the urine contained biliary pigment; all possible care could not prevent the appearance of jaundice, but for three more days the icterus remained latent, while the migraine persisted with almost intolerable severity. When on the fifteenth day the signs of biliary retention became manifest, the severe headaches disappeared. Following a discussion of the macroscopic aspects of the liver, the histologic aspects of the sections, the chemical analysis of the bile and the results of the intervention, the author emphasizes that this case demonstrates that an edema of anaphylactic origin may be the cause of an icterogenic hepatitis. He says that this is by no means the first observation that a catarrhal icterus has been preceded by signs of intolerance, particularly by urticaria. In an earlier report he pointed out that preicteric rheumatism, by its frequent association with urticarial eruptions, constitutes together with them a prodromal complex of spontaneous serum disease. Urticaria may assume the aspects of Quincke's edema. On the other hand, certain cutaneous eruptions have a similar semeiologic value. Dyspeptic disorders are often entirely absent; it is as if the cutaneous disorders served as their equivalents. The author further directs attention to the antagonism between the urticarial symptoms and the icterus, for the cutaneous manifestations cease instantly on appearance of the signs of biliary retention. Arthralgias are often associated with urticaria or Quincke's edema. The author points out that the violent preicteric headaches may be of anaphylactic origin and an equivalent of urticaria and arthralgia. The author further cites from the literature instances revealing the role of intolerance in icterus. He mentions the icterus that develops in connection with antisyphilitic therapy, with the use of chloroform, with alimentary intoxication and so on.

Archives des Maladies de l'Appareil Digestif, Paris

28: 329-432 (April) 1938

Inverted Cecum and Chronic Subhepatic Appendicitis. F. Trémolières, A. Bergeret and A. Maurice.—p. 329.
*Studies on Vitamin C Metabolism: Physiologic Aspects of Metabolism During Spontaneous Conditions and After Saturation. M. Vauthey.—p. 351.
Glycosuria and Diabetes with Cancer of Pancreas.—J.-V. Grott.—p. 361.

Metabolism of Vitamin C.—In this paper Vauthey reports further studies on the vitamin C metabolism (see also *Archives des maladies de l'appareil digestif* **28**:230 [March] 1938; abstracted in THE JOURNAL of June 4, 1938, page 1963). He shows that the comparison of the results of the various tests are highly instructive, particularly the differences in the values that are obtained in an organism moderately charged with vitamin C and in one artificially charged with vitamin C. He studied the fasting ascorburia first in the course of the normal metabolism and then after saturation; that is, after the person had been given daily for ten days 100 mg. of ascorbic acid. He found that the saturation doubled the fasting ascorburia. Then he studied the basic ascorburia after progressive saturation. Whereas the five day average of basic ascorburia is 0.94 under ordinary conditions, it rises to 1.39 in the course of five days of progressive saturation and to 1.60 at the end of another five days of progressive saturation. The third group of tests carried out by the author were those concerning the twenty-four hour excretion, first under normal conditions, then after ten days of progressive saturation and finally after massive saturation. He considers the twenty-four hour excretion after the massive saturation as the most important and the most interesting test. In making the latter examination he used a modification of Youman's test, in which 600 mg. of ascorbic acid is given. This test, for which he found in the normal state a numerical value (from 28 to 29 per cent of the ingested dose) exactly intermediate between that of American (30 per cent) and English authors (27 per cent), seems to give for a normally charged organism a constant and relatively fixed result. The test is of great value; in the clinic its total results make it possible to determine in a given case whether the organism is charged with or has a deficiency of vitamin C; by its fractionated results of the first hours it indicates the quality and intensity of the digestive resorption of the administered vitamin C.

Presse Médicale, Paris

46: 849-864 (May 28) 1938

Resistance of Bones and Site of Fractures of Long Bones by Indirect Causes. H. Rouvière.—p. 849.
*Epidemiologic Aspects of Epidemic Encephalitis in Japan. R. Inada.—p. 851.
Vascular Spasm Provoked "in Vitro"; Experimental Study with Aid of Isolated and Surviving Vascular Piece. A. Mougeot.—p. 853.

Epidemic Encephalitis in Japan.—Inada surveys epidemic encephalitis in Japan during the years from 1924 to 1935 inclusive. He shows that in some regions of Japan, particularly in those bordering on the sea of Japan, epidemic encephalitis is frequent and exists almost constantly, whereas in other regions epidemics occur interruptedly, and in still other regions epidemic encephalitis occurs only sporadically. The number of cases of epidemic encephalitis occurring annually during the years from 1924 to 1935 are listed in a table. This tabular report indicates that the epidemic of 1924 was the most severe; then follow in the order of their severity the epidemics of 1935 and 1929. The more severe epidemics seem to recur at intervals of five or six years. In other tables the author lists the monthly incidence of the cases of epidemic encephalitis. These tables indicate that the morbidity culminates during August and September. The author thinks that a maximal morbidity during the summer months constitutes one of the characteristics of the Japanese type of epidemic encephalitis. Discussing the incidence of epidemic encephalitis in the two sexes, the author shows that the morbidity is greater in men than in women (124 to 100). Further he shows tables indicating the incidence of epidemic encephalitis in different age groups during the various epidemics as well as the mortality rate for the different age groups. The tables indicate that the mortality is greatest in the higher age groups. The author says that reinfections are extremely rare. Discussing individual predisposition he says that nervousness, neurasthenia and other disorders of the nervous system seem to reduce the organism's resistance to epidemic encephalitis. Overexertion, mental as well as physical, and exposure to the hot sun seem to be predisposing factors. The author cites other climatologic factors that seem to be of significance in the development of epidemic encephalitis.

Revue Française de Pédiatrie, Paris

13: 565-684 (No. 6) 1938

*Recent Cases of Grave Familial Icterus of the Newborn. M. Péhu, R. Noel and A. Brochier.—p. 565.
Diet of Children of School Age. E. Lesné and G. Dreyfus-Sée.—p. 612.
Prophylaxis of Tuberculosis in Schools. G. Dreyfus-Sée.—p. 638.
So-Called Pernicious Anemia with Deviations in Hematologic Picture of Infant. S. Van Creveld and P. J. Zuidema.—p. 656.
Treatment of Diabetes Mellitus in Children by Free Diet. A. W. Vegter.—p. 662.

Familial Icterus of the Newborn.—In this extensive report Péhu and his associates discuss Pfannenstiel's type of grave familial icterus of the newborn. Their report covers seventy familial series, sixty-five of which they collected from the recent literature and five of which they observed themselves. After calling attention to the growing interest in this disorder during recent years, they define the subject, give a historical review, cite cases from the literature and then describe their own observations. They point out that grave familial icterus can no longer be regarded as a rare disorder. In recent years the cases of grave familial icterus in the newborn seem to have multiplied and the authors think that this is due to the fact that attention has been called to this disorder and that obstetricians

and pediatricians think of this type of icterus and are able to recognize it clinically and hematologically. A study of the pathologic antecedents of the parents of families with grave icterus of the newborn reveals some interesting factors. It has been observed that in families with this form of icterus the first or the first two or three infants are free from the icterus. While this rule is not absolute, it is nevertheless observed in the majority of cases and it is a phenomenon that is difficult to explain. The obstetric antecedents are often quite interesting. A review of a number of familial series reveals not only deaths from grave icterus, that is mortality of the newborn, but also an increased number of abortions, premature deliveries and stillbirths. This has been known for a long time, but it is only since von Gierke demonstrated the pathologic identity of fetoplacental dropsy, of grave icterus (type Pfannenstiel) and of the anemia of the newborn that more attention has been given to this polymortality. After citing a number of familial histories illustrating this polymortality, the authors discuss the aspects of the blood in grave familial icterus of the newborn. It appears well established that in the majority of cases an erythroblastemia exists, but this anomaly is not constant. In some authentic cases it is missing. The authors enumerate the cases of grave icterus without erythroblastosis but show that in some of these cases the examination was not sufficiently detailed. They emphasize that in grave familial icterus of the newborn it is indispensable that the blood be examined from the first hours after birth and that it be repeated several days in succession for a week. After directing attention to the desirability of the examination of the bone marrow in cases of grave familial icterus, the authors discuss the prophylaxis and treatment. They admit that in view of the uncertainty about the pathogenesis and the pathologic physiology there is as yet no truly rational treatment. Nevertheless, it has been recommended that hepatic preparations be administered during the last three months of gestation. The authors think that this is too late and that the duration of the medication is insufficient; they suggest that the treatment be instituted when the intrahepatic erythropoiesis begins in the embryo; that is, about the fourth month. In order to avoid the development of a state of intolerance toward the medication it may be discontinued from the end of the fourth to the beginning of the seventh month. The use of vitamin C during pregnancy has also been suggested. After birth, the blood of the child must be kept under careful observation and if necessary blood transfusion should be resorted to. In the final chapter the authors cite several problems that still await solution.

Schweizerische medizinische Wochenschrift, Basel

68: 577-640 (May 21) 1938. Partial Index

Prognosis of Old Fracture of Navicular Bone of Hand. A. Brunner.—p. 587.
*Differential Pressure of Cerebrospinal Fluid in Cerebral Traumatisms. P. Decker.—p. 588.
Treatment of Fracture of Patella. M. Dubois.—p. 597.
*Massage of Vascular Wall and of Surroundings of Veins in Treatment of Subsided Phlebitis and Thrombophlebitis. C. Henschen and F. Becker.—p. 599.
Nonpuerperal Osteomalacia Treated by Ovariectomy. A. Jentzer and R. Weyeneth.—p. 602.
Treatment of Inferior Prognathism. C. Julliard.—p. 609.
*Experiences with Catgut. A. Ritter.—p. 620.

Pressure of Cerebrospinal Fluid in Cerebral Traumatisms.—Decker discusses the possible causes of the increase in intracranial tension after cerebral traumatisms and the treatments that aim at the dehydration of the brain. He points out that this method is not without danger for, if continued too long, it may give rise to the phenomenon that is referred to as toxic dehydration. Consequently, it is important to know when to suspend the dehydration. The author found that his determination of the differential pressure of the cerebrospinal fluid is of value in this respect. He measures the pressure of the cerebrospinal fluid at the beginning and at the end of lumbar puncture during which a definite amount (perhaps 1 cc. of fluid) is extracted. In one case of commotio cerebri, the pressure at the beginning of the lumbar puncture was 22 cm., after the extraction of 1 cc. of fluid it was 17 cm., and after the extraction of 2 cc. it was 13 cm. Thus the differential pressure per cubic centimeter was 4.5 cm. Repeated lumbar punctures revealed that this differential pressure subsided gradually. The author gained the impression that the differential pressure during a number of cases of cerebral traumatism seems to be related to the variations in the cerebral volume, which are the result of the edema. He thinks that the study of the differential cerebrospinal pressure can aid in directing the treatment of the post-traumatic cerebral disturbances, particularly if the treatment consists in dehydration.

Massage in Phlebitis.—Henschen and Becker say that massage in phlebitis can mobilize a latent infection or even elicit an embolism. However, the authors recommend massage only after the phlebitis or thrombophlebitis has subsided. The signs of inflammation must have subsided. The vein in question must no longer be sensitive to pressure. In case of deeper processes on the leg, the pressure points medial to the tibia must be tested. Moreover, all the manipulations for the detection of a latent phlebitis should be used. To detect a subfascial inflammation, pronation of the foot, or adduction, hyperextension or exterior rotation in the hip joint for the purpose of eliciting pain have been recommneded. Moreover, subjective pains in the muscles and nocturnal muscular spasms must have subsided. Body temperature and pulse rate must have returned to normal. The sedimentation speed must either have become normal again or be on the decline. Moreover, the authors also used the Aldrich-MacClure test. In case of an accelerated resorption of the wheal, they regarded massage as too early. If the various tests and examinations disclose that the phlebitic process has subsided, the authors begin the massage with a mild effleurage. It serves to detect possible painfulness and changes in the pulse frequency and discloses whether real massage of the veins and the surrounding tissues can begin. In view of the purpose for which it is employed, massage consists chiefly in stroking and rubbing manipulations. The authors mention first the longitudinal massage of the saphenous veins, consisting in a loosening of the tissues surrounding the veins and in a light massage of the venous walls. Then there is the oblique massage of the branches of the veins, which influences the tissues surrounding the veins, and then the veins themselves. There is rolling massage and finally indirect elongation massage by means of alternating flexion and extension of the leg. In evaluating venous massage, the authors stress that it promotes the metabolic processes of the venous wall by way of improving the circulation of the vasa vasorum; that it softens the venous wall, exerts an antispasmodic action, accelerates the blood stream, improves the function of the venous valves and has an indirect effect on the joints which may be involved in the phlebitic process and so on.

Experiences with Catgut.—Ritter cites a number of still unsolved questions that arise in connection with the use of catgut in surgery. In order to clarify these problems, a questionnaire was submitted to a number of Swiss surgeons and the author summarizes the answers. He found that in spite of many theoretic objections to the use of catgut, and the partial inadequacy of the chemical methods of sterilization, catgut is used extensively as suture and ligature material. Various amounts of iodine or other chemicals are contained in the different types of catgut, but there is little difference in sterility. The forms of catgut which are marketed ready for use are practically sterile. In the cases in which catgut was suspected as being the source of an infection this could not be proved. Since the sterility of the catgut of thin caliber is more reliable than that of the thicker threads, the author thinks that whenever possible the thin catgut should be used; if necessary, it could be doubled. Sterilization of catgut in the general routine of the operating room is probably too complicated and not always feasible. A substitute for catgut, a resorbable preparation made from muscles of horses, has not proved entirely satisfactory; nevertheless the author thinks that science, technic and industry should make all efforts to develop a satisfactory substitute. In order to increase the tensile and knotting strength and to prolong the time of resorption, catgut has been impregnated with metals such as chromium, gold, silver, copper and mercury. Experiences with the catguts impregnated with gold or chromium have been favorable, but these preparations do not have distinct advantages over iodized catgut. The reports of Swiss

surgeons differ from reports in the foreign, particularly French, English and American literature, as regards disturbances of the healing process caused by transmission of bacteria from nonsterile catgut; in this respect, the Swiss reports are negative. The Swiss, like others, complain of irritations due to reactions to the introduction of the froeign body and its chemical contents. However, in contradistinction to the foreign reports the Swiss surgeons did not observe allergic reactions to catgut.

Arch. Ital. d. Mal. d. App. Diger., Bologna

7: 215-326 (May) 1938

*Secretory Gastric and Pancreatic Functions in Heart Diseases. A. Bologna and A. Costadoni.—p. 215.
Gastric Secretion and Action of Belladonna: Experiments. R. Ginoulhiac.—p. 255.
Liver Reactions and Cholecystitis in Experimental Typhlitis. E. Monzardo.—p. 273.
Liver Treatment in Gastric Diseases: Researches on Action of Liver Extracts on Curve of Gastric Secretion. A. Crisafulli and L. Livrea.—p. 305.
Behavior of Bactericidal Power of Gastric Juice in Achylia, Normal Gastric Acidity, Hypoacidity and Hyperacidity. A. Sebastianelli.—p. 316.

Stomach and Pancreas in Heart Diseases.—According to Bologna and Costadoni, the development of gastric disorders and gastralgia is frequent in diseases of the heart. The authors followed the behavior of the gastric and pancreatic functions in sixty patients ranging in age from 16 to 81 years who were suffering from heart disease. They found that gastralgia is rare and unrelated to the circulatory insufficiency. It is due to atheromatosis of the abdominal aorta and its visceral branches. More rarely it is due to intermittent claudication of the stomach or to acute or chronic coronary atherosclerosis. Insufficient digestion is in direct relation to decompensation and the seriousness of circulatory insufficiency and venous stasis of the gastric wall. Generally the cardiac disturbances overshadow the gastric disorders, although in some cases the reverse is true. The diagnosis of insufficient digestion is easily made. The therapeutic test is of value in doubtful cases. Digestive disorders of cardiac origin are controlled by administration of cardiokinetic drugs rather than by digestive substances. In grave decompensation with peripheral edema there is stasis of the gastric juice during fasting. The total and free hydrochloric acid are low or there is anacidity. The gastric secretion contains a large amount of mucus. The gastric secretion is normal, however, in some cases of mild decompensation. External and internal functions of the pancreas are normal in compensation and diminished in decompensation. The author concludes that decompensation induces diminished function of the digestive tract and the pancreas. The venous stasis from decompensation causes anatomic injury of the stomach, intestine and pancreas, which may be permanent if stasis is grave or repeated.

Rivista di Clinica Pediatrica, Florence

36: 385-480 (May) 1938

Neurosympathetic Disequilibrium and Myocarditis in Diphtheria. G. Frontali.—p. 385.
*Sedimentation Speed of Erythrocytes in Some Diseases of Children, Especially Pretuberculosis. G. Vanni.—p. 397.
Still's Disease: Lesions of Lymph Nodes. S. Levi.—p. 409.
Relations Between Iodine in Blood and Basal Metabolism in Children. G. Macciotta.—p. 425.
Platelets in Blood of Newly Born Infants. F. Rasi and M. Bolletti.—p. 430.

Erythrocyte Sedimentation in Pretuberculosis of Children.—Vanni followed the behavior of the sedimentation speed of erythrocytes in the blood of eighty-five normal children and of forty-one who were suffering from either tuberculosis or a pretuberculous or nontuberculous disease. The determinations were made after the first hour in the Westergren test. The author concludes that the speed of the erythrocyte sedimentation in normal children aged from 1½ to 14 years varies from 14 to 8 mm. Figures from 14 to 16 mm. are normal, especially in children under 4 years of age. The average difference between samples of blood taken during a period of fasting and of digestion, respectively, or at different intervals during the day is about 2 mm. The average difference in two tests made simultaneously on the same sample of blood is about 1 mm. Variations of only a few millimeters in the results of a test in comparison with normal figures or with those obtained in previous or following tests have no significance as to results. There are certain slight increasing or diminishing collective periodic variations in the results of the test of sedimentation of the erythrocytes that are of unknown cause; they may last for five or six days and then disappear. The sedimentation speed of erythrocytes is normal in children who have pretuberculosis and adenopathies and give a positive reaction to tuberculin. It is increased in grave forms of tuberculosis and in tuberculous and benign lymphocytic meningitis, as well as in malignant lymphogranuloma. It is slightly increased in subacute diseases of the respiratory tract and in erythema nodosum.

Deutsche Zeitschrift für Chirurgie, Berlin

250: 263-358 (May 11) 1938

Hemorrhoids and Rectal Varices. R. Neumann.—p. 263.
*Fat Embolism and Its Treatment. E. Rappert.—p. 276.
Traumatic Rupture of Pericardium. H. Peter.—p. 295.
Intracardial Injections. E. von Novák.—p. 310.
Experimental and Clinical Studies on Use of Local Anesthesia in Inflamed Tissues. H. Rosenthal.—p. 325.
Treatment of Pleural Empyema. M. Mennenga.—p. 348.
Contribution to Pathology of Esophagus. L. Unterrichter.—p. 354.

Treatment of Fat Embolism.—According to Rappert, there were sixty-nine severe cases of fat embolism observed at the Second Surgical University Clinic in Vienna between Jan. 1, 1933, and May 1, 1937. A differentiation is made between fat embolism of the lesser circulation alone and that of the lesser and greater circulation. Fat embolism of the greater circulation alone is theoretically possible in the presence of patent foramen ovale. Clinically, however, it has never been observed. The symptoms of fat embolism of the lesser circulation are dyspnea, cyanosis, small, fast, almost imperceptible pulse, pale, waxy-yellow skin and restlessness. The symptoms of fat embolism of the greater circulation are disturbances of consciousness, convulsions, paralyses, rise of temperature, oliguria and anuria. Secondary anemia, shock and multiple rib fractures are to be considered in the differential diagnosis. Both surgical and medical therapeutic measures so far proposed for this condition were without result. The therapeutic problem, according to the author, consists in reducing the large droplets of fat which obstruct the capillaries to smaller droplets in order to enable them to pass through the pulmonary filter. The well known fat solvents and emulsifiers failed to accomplish this in animal experiments. With the use of decholin (sodium salt of dehydrocholic acid) in combination with circulatory stimulants and a papaverine preparation the author was able to save experimental animals after injecting into them several times the fatal dose of fat. On the basis of his animal experiments and the use of sodium dehydrocholate in severe clinical cases of fat embolism the author developed the following scheme of treatment: The patient must be kept at absolute rest and, if necessary, given opiates. A drip transfusion is instituted and sodium dehydrocholate is administered in large doses (from 200 to 300 cc. of a 20 per cent solution daily). The effect of sodium dehydrocholate is prompt and is manifested in quiet, deep respiration, the disappearance of cyanosis and an improved pulse. The effect of the sodium dehydrocholate can be enhanced by the exhibition of a 25 per cent solution of pyridine betacarbonic acid diethylamine, metrazol and other drugs. The effect of sodium dehydrocholate can be further improved by administration of a papaverine preparation, which has the effect of dilating pulmonary capillaries. Renal complications such as oliguria and anuria were treated with sodium dehydrocholate, caffeine, a papaverine preparation, theophylline with ethylenediamine and prolonged diathermy of the kidney. The treatment of fractures is undertaken several days after the disappearance of symptoms of fat embolism and even then in a careful manner. The injection of large doses of sodium dehydrocholate is apparently harmless. It produces icterus, which however does not last more than twenty-four or forty-eight hours. The author stresses the advisability of repeated massive blood transfusions to combat anemia. Of the forty-nine patients not subjected to this treatment, only one survived (2 per cent); of the twenty patients treated with sodium dehydrocholate, seven (35 per cent) have survived.

Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

57: 439-544 (May) 1938. Partial Index

Experimental Studies on Venous Air Embolism. B. Kerber.—p. 439.
Displacements, Protrusions and Movement of Mediastinum Due to Rare Unilateral Changes of Pulmonary Tissue. M. Dahm and H. Schmitt. —p. 454.
External Contour of Stomach. K. Steuer.—p. 467.
New Method of Radiologic Demonstration of Articular Cartilage, Particularly of Semilunar Cartilages of Knee Joint Without Injection of Contrast Medium. Y. Nordheim.—p. 479.
Roentgenologic Diagnosis of Cretinous Hip and Osteo-Arthrosis Cretinosa. E. Feistmann-Lutterbeck.—p. 506.
*Making Roentgenograms of Heart During Certain Phases of Its Action. H. Ludwig.—p. 515.

Roentgenograms of Heart.—Ludwig stresses that roentgenograms which are made to determine the size of the heart must be made during a certain phase of the cardiac action. Studies on fluctuations in the size of the heart are reliable only if they are based on exposures that are made always during the same phase of the cardiac action. The author describes and illustrates a simple apparatus which makes possible the elicitation of an exposure during a definite phase of the heart action. Exposures that were taken with the aid of this apparatus revealed that the differences between the maximum and minimum of the transverse diameter of the heart may be considerable under identical conditions, that is, caused only by the action of the heart. These differences are in most cases in excess of 5 mm.

Medizinische Klinik, Berlin

34: 665-696 (May 20) 1938. Partial Index

*Smoking in Pathogenesis of Internal Diseases. R. Schmidt.—p. 665.
Poliomyelitis. A. Nemecek.—p. 669.
Clinical Aspects of Adrenal Disorders. W. Hollmann.—p. 670.
Concordant Occurrence of Hypertrophy of Prostate in Set of Uniovular Twins. O. Kaufmann.—p. 680.

Smoking in Internal Diseases.—Schmidt says that the effect of tobacco smoking is not identical with the action of the alkaloid nicotine but involves a number of other factors as well. For this reason he avoided the term nicotine poisoning. It cannot be denied that there are persons who smoke much and still feel well and reach an advanced age although it would be illogical to conclude from this that smoking is entirely harmless. In considering the effects of smoking it is necessary to pay attention not only to the process of smoking but also to the condition of the smoker. In some persons the moderate use of tobacco may be not only permissible but even desirable. In this connection the author mentions Bezecny's observation that in some cases of chronically relapsing aphthae smoking has been known to have beneficial effects. Nevertheless, since immunity to the ill effects of nicotine is difficult to determine and since the harmful effects are rather frequent and severe, a general campaign against smoking is justified. After pointing out that smoking may have a sedative as well as a stimulating action, the author takes up the sensitization that may result from the use of nicotine and mentions other factors that play a part in this nonspecific sensitization, such as congenital weakness of some organs, endocrine disorders, latent infections, metabolic anomalies, exogenic intoxications and excessive exertion. In the so-called erethistic asthenic types these factors are most likely to exert their full effect. Moreover, these persons seem to crave stimulants as well as sedatives more than do others and thus a vicious circle is set up. The author further discusses the disorders caused by nicotine in the digestive tract, circulatory apparatus, nervous system, endocrine glands and respiratory tract. Discussing the factors that increase the harmful effects of tobacco, he mentions the smoking of the last third of the cigaret or cigar (increased nicotine content), the smoking of fresh and moist cigars, the smoking of tobacco that has only been dried and has not undergone fermentation, the inhalation of smoke and smoking on an empty stomach. With regard to the breaking of the nicotine habit, the author says that complete abstinence is better than mere reduction in quantity, for the smoking of one cigar or cigaret readily leads to another one. The demand for abstinence is the more urgent, the more serious the disorder (angina, sclerotic hypertension, intermittent claudication) and the more certain it is that the nicotine plays an important part in the pathogenesis of the process. In case of sudden withdrawal there may be a temporary increase in nervousness and congestions but there are never threatening symptoms. Measures that may be helpful during the beginning of the period of abstinence are chewing of gum or of lozenges or irrigations with 0.1 per cent solution of silver nitrate. If possible, the time of complete withdrawal should be arranged so that it concurs with the beginning of a vacation.

Zentralblatt für Chirurgie, Leipzig

65: 1089-1136 (May 7) 1938. Partial Index

Indications, Technic and Results of Operative Treatment of Bland Venous Thrombosis. A. Läwen.—p. 1089.
Treatment of Congenital Fistulas of the Neck. P. E. A. Nylander.—p. 1095.
Preliminary Choledochotomy. F. I. Kaiser.—p. 1097.
Bursitis Calcarea Subdeltoidea. H. Knüpper.—p. 1099.
Vertebral Tuberculosis and Tuberculosis of Genito-Urinary Tract: Spontaneous Healing of Vertebral Caries. J. Rivoir.—p. 1107.
*Renal Tuberculosis. P. Clairmont and F. Schaffhauser.—p. 1115.

Renal Tuberculosis.—According to Clairmont and Schaffhauser, every case of tuberculosis calls for examination of the genito-urinary tract. The finding of tubercle bacilli in the urine demands a cystoscopic examination, determination of renal function and ureterocatheterization, in order to demonstrate the localization of the lesion. One hundred and fifty-three patients admitted to their clinic (Zurich) were treated by practicing physicians for chronic cystitis for a period of not less than three months; seventy-nine of these cases were not properly diagnosed and sixty were considered cystitis. Conservative treatment in cases of renal tuberculosis leads to the extension of the disease to the kidneys, the bladder and the genitalia. Such patients are a source of danger to their community because of the excretion of tubercle bacilli in their urine. The authors feel that primary tuberculosis of the renal pelvis probably does not exist. Temporary encapsulation of a tuberculous focus in the kidney is relatively rare. As a rule the tuberculous lesion progresses to involve more renal tissue with caseation, cavity formation and extensive destruction of the organ. Complete isolation of a tuberculous focus from the excretory urinary passages by scars is possible. They emphasize the frequent occurrence of severe toxic nephritis in the nontuberculous kidney which may disappear after the removal of the tuberculous kidney, although in many cases it may be the cause of fatal uremia. Spontaneous cure of chronic caseating renal tuberculosis has been reported only twice, once by Castaigne and once by Wildbolz. The authors quote the work carried out in their own clinic by Dimtza and Schaffhauser, in which 225 patients with extrarenal tuberculosis were studied by the method of animal tests and culture of tubercle bacilli. Of the thirteen patients in whom tubercle bacilli were demonstrated in the kidney urine, necropsy showed eleven to have renal tuberculosis. The important question from a therapeutic standpoint is whether the clinical diagnosis of an early caseous renal tuberculosis, based on the demonstration of the bacilli, the pyuria and the diminished function, constitutes per se an indication for nephrectomy. The question of bilateral involvement in the early cases is a difficult one. The indication for nephrectomy in unilateral early tuberculosis is established when repeated examinations over a fairly long period of time demonstrate that the other kidney is not tuberculous and that the involved kidney shows signs of progression of the disease, a considerable pyuria and a diminished function. Conservative treatment is not justified because one cannot expect a spontaneous healing of even a small caseating focus. The earliest symptoms are frequently those of cystitis. In about 17 per cent of the cases a typical renal colic may be the first manifestation. Every case of renal colic without a demonstrable stone should arouse suspicion of tuberculosis. In about 5 per cent the first symptom is hematuria, which is, as a rule, painless. The cardinal symptom of renal tuberculosis is the demonstration of tubercle bacilli in the urine. Patients with unilateral renal tuberculosis treated conservatively die, as a rule, in the course of five or six years. As contrasted to this high mortality the authors quote almost 80 per cent of permanent cures following early nephrectomy, and from 50 to 60 per cent for the late cases. The authors therefore stress the early diagnosis and the earliest possible nephrectomy in unilateral renal tuberculosis.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

78: 889-952 (April 19) 1938

Differentiation of Types of Leprosy Patients from Endemiologic Point of View. P. H. J. Lampe.—p. 890.
*Etiology of Tropical Sprue and Related Diseases. B. C. Hopman.—p. 904.
Vitamin B_1 Content of Certain Indian Foodstuffs. W. F. Donath and J. P. Spruyt.—p. 915.
Further Studies on Xerophthalmia. G. A. Hadikoesoemo.—p. 935.

Etiology of Tropical Sprue.—Hopman, after pointing out that various theories have been advanced about the cause of tropical sprue (infection, vitamin deficiency and so on), discusses the metabolic conditions under different latitudes but particularly in the tropics. If a person from the northern latitudes comes to the tropics, his energy consumption and blood pressure are decreased, as is also the production of the digestive juices; in fact the entire metabolism is at a lower level and it becomes necessary to reduce the intake of food, particularly foods with high caloric value such as fats. If carbohydrates and fats are taken in too large quantities for the prevailing metabolic conditions or if the organism utilizes inadequate amounts, various disorders may result. In this connection the author discusses the etiology of such disorders as obesity, diabetes mellitus and sprue. Obesity develops when fats and carbohydrates are absorbed by the organism but are not entirely utilized for energy production and become deposited under the skin or in the organs. Glycosuria develops when the carbohydrates are no longer all absorbed by the organism but are eliminated with the urine. Sprue seems to be connected with an excess of fats; after a hyperfunctioning of the liver and pancreas there develops a dysfunction of both organs, particularly the liver; the bile acids are secreted in inadequate quantities and thus the fats are not properly absorbed and large quantities of fatty acids and of cleavage products of fat are found in the stools. Under the influence of the inadequate utilization, abnormal processes of fermentation, borborygmus and meteorism develop and it is probable that toxins are formed. As the result of the poor utilization of the fat, swellings of the mucosa develop. Secondarily there is an impairment in the absorption of other foodstuffs. Vitamin B deficiency anemia and emaciation develop. The fact that sprue is more frequent in adults and in sedentary workers than in children and in persons who do physical work the author traces to the greater energy requirements of children and of physical workers. The morning diarrhea in sprue he ascribes to the fact that during the night the energy metabolism is at a minimum so that many unutilized fats are eliminated. The failure of liver therapy in sprue is due, he thinks, to the fact that it counteracts a symptom rather than the cause of the disease. The author reaches the conclusion that obesity, diabetes mellitus and sprue are safety valves which protect the organism against overheating if excessive amounts of calories are taken in. Moderate intake of food and sufficient exercise are helpful in the treatment and prevention.

Acta Chirurgica Scandinavica, Stockholm

81: 1-98 (May 12) 1938

Condition of Tongue in Dehydration and Intestinal Motor Paralysis. E. Kirk.—p. 1.
*Intussusception. T. Björkroth.—p. 5.
Double Kidney: Case. B. Bager.—p. 36.
Effect of Inflation of the Stomach on Blood Circulation. H. Wahren.—p. 43.
*Electrocardiographic Examinations of Operative Patients. N. H. Brodersen.—p. 57.
Importance of Electrocardiography for Judgment of Risk of Operation by Strumectomy for Thyrotoxicosis and by Thoracoplasty for Pulmonary Tuberculosis. H. F. Harbitz and A. Jervell.—p. 64.
Importance of Preoperative Electrocardiography. O. Römcke.—p. 77.
Lobectomy and Pneumonectomy for Bronchiectasis and Bronchial Stenosis. J. Holst.—p. 87.

Intussusception.—Björkroth states that among twenty-one patients treated at the Norrköping Hospital for intussusception between 1900 and 1937 there were fifteen cases due to functional invagination, three caused by a tumor, and three cases caused by Meckel's diverticulum. He stresses the diagnostic as well as the therapeutic value of the opaque enema. It was administered in seven recent cases, in six of which typical pictures of intussusception were obtained. The treatment in the first group was operative. Reduction was possible in eight, resection was necessary in two and there was a spontaneous reduction disclosed at operation in one. An attempt to reduce the intussusception by opaque enema and manipulation was tried in two but was only partially successful and was therefore followed by operation. Because little contrast material can be made to pass the ileocecal valve, manipulation can give little information as to the completeness of the reduction, nor can it have any effect on an intussusception situated at a higher level. The better results obtained in recent years both by manipulative and by surgical means are due to earlier diagnosis. The partial disinvagination brought about by an opaque enema makes the subsequent surgical correction easier. In the four cases of invagination caused by tumor, three were adenomas of the small intestine and one a lipoma. There is possibly no difference between polyposis of the small and the large intestine. The lesser tendency to malignant degeneration on the part of the polyps of the small intestine is probably due to the fact that they are exposed to less irritation than those of the colon and that they are detected early because they give rise to complications at an early stage.

Electrocardiographic Examinations of Operative Patients.—Brodersen states that preoperative cardiographic studies on patients past 50 years of age disclosed abnormalities in forty-eight of 100. In the group of fifty-two patients with normal electrocardiograms there occurred eight postoperative fatalities, which, however, were not due to cardiac complications. There were likewise eight postoperative fatalities in the group of forty-eight patients exhibiting abnormalities in the electrocardiograms, but in only one of these was the death caused by the heart condition (coronary infarct). Temporary postoperative fibrillations occurred in two cases in which the electrocardiogram had previously been found normal. There occurred no cardiac complications, apart from the one fatal case, among the forty-eight patients whose electrocardiograms exhibited deviations from the normal. No patient in the group was denied operation because of the electrocardiographic observations. The author concludes that electrocardiographic irregularities cannot be accepted unreservedly as a contraindication to operative intervention. The doubtful alterations may be disregarded altogether, while the definite alterations must be considered individually. The history and the clinical symptoms are to be considered of greater importance than the evidence furnished by the electrocardiogram. Major operative interventions may be safely carried out in patients with positive electrocardiograms but with compensated hearts.

Hospitalstidende, Copenhagen

81: 365-392 (April 19) 1938

Focal Infection, Especially Stomatogenic: VI. Experimental Investigations on Etiology and Pathogenesis of Chronic Disorders of Joints; Attempts with Streptococcus Strains of Higher Virulence. E. Jarløv and O. Brinch.—p. 365.
Id.: VII. Attempts with Streptococcus Strains of High Virulence. E. Jarløv and O. Brinch.—p. 374.
Id.: VIII. Control Experiments with Nonarthrophile Streptococcus Strain. E. Jarløv and O. Brinch.—p. 377.
Blood Sugar Curve During Lumbar Anesthesia Together with Variations in Blood Sugar as Criterion for Disorder of Adrenals During Operations on Kidney (Preliminary Report). K. Kalbak.—p. 380.
*Hemangioma Cavernosum of Interosseus Muscles of Hand: Case. F. Sørensen.—p. 387.

Hemangioma of Interosseus Muscles.—A woman aged 47 had had a swelling of the dorsal side of the right hand for a year, without preceding trauma, which increased somewhat and caused tenderness and pain. Sørensen reports that external examination together with roentgen examination pointed to a lipoma (pseudofluctuation, rhabdomyoma or sarcoma). Operation revealed a cavernous hemangioma in the interosseus muscles which had developed partly by growing through and partly by pushing aside the surrounding tissue, and because of its localization to the interstice the cavernoma had caused deviation and atrophy of the adjacent metacarpal bones. The case is unique because of the changes in the bones. The tumor contained fully developed bone tissue, which supports the theory of an embryonal disturbance as the cause. Complete removal of the tumor resulted in recovery.